Preface

The National Centre for Agricultural Economics and Policy Research has completed a decade of its existence at the dawn of new millennium. The effective functioning of the Centre however started in 1995. During this short span, the Centre has established a track record of impressive research. The new millennium, however, offers more complex challenges and exciting opportunities. The Quinquennial Review Team constituted to review the performance of the Centre after appreciating its good work, suggested to address the emerging challenges.

This year the Centre has focused on number of issues related to growth and sustainability of rice-wheat production system, pulses and livestock. The Centre has also made considerable contributions to assess the economic feasibility of introducing alternatives to chemical pesticides on a wider scale. To facilitate effective location specific and demand driven targeting of new interventions, the entire country has been categorised into homogeneous agro-climatic zones and production systems. Addressing issues emerging in the wake of trade liberalisation is a major concern. Implementation of WTO agreement is likely to have a differential impact on different agricultural commodities and the society. The studies on implications of trade liberalisation have indicated several measures to improve the export competitiveness and counteract adverse effects of liberalised imports. The findings of some other studies relating to irrigation inequality, institutional arrangements for effective technology generation, dissemination and impact are also important to impart resilience to the agricultural sector.

This report has been compiled Dr. Pratap S. Birthal and Dr. Harbir Singh. Dr. Sant Kumar, Ms. Seema Khattar and Ms. Sonia Chauhan provided help in preparation of the manuscript. I am thankful to them and other colleagues who have contributed to this effort.

March 2001
New Delhi

Mruthyunjaya
Director

ANNUAL REPORT
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Executive Summary

The National Centre for Agricultural Economics and Policy Research (NCAP) has completed a decade of its existence. During this period the Centre has gained visibility amongst economists, scientists and policy makers through the hard and dedicated work of its staff and adequate support and guidance from the Indian Council of Agricultural Research. The Centre at present has 19 scientists (including one National Professor) and fourteen other staff in position. It had a budget outlay of Rs 123.85 lakhs for the year 2000-2001.

The Centre is guided by a high level Research Advisory Committee (RAC) comprising of eminent professionals outside the ICAR system. Professor S. S. Johl is the current chairman of the RAC. The Centre has also a Management Committee to guide the Centre in its research administration. There are a number of other internal committees such as Staff Research Council, Academic Policy and Planning Committee, Official Language Committee, Budget Committee, etc. that provide assistance and guidance to the management. The Quinquennial Review Team (QRT) under the chairmanship of Prof. V.S. Vyas has submitted its report on Centre's functioning in terms of research, administration and outreach and has made a number of useful recommendations to strengthen the Centre's research and outreach in its mandated areas. The Centre is in the process of implementation of these recommendations.

The research at the Centre is conducted under five broad themes viz., technology policy, sustainable agricultural systems, markets and trade, institutional change, and agricultural growth and modeling. Each theme is headed by a senior professional. Research is underway under each theme mainly on contemporary issues. Salient research achievements of the Centre during 2000-2001 are summarized below.

To improve research planning and generate need-based technologies, the entire country has been demarcated into five agro-ecoregions viz., Arid, Coastal, Hill & Mountain, Irrigated and Rainfed. These eco-regions are further classified into a number of production systems.

Agro-ecoregions and production systems cut across administrative boundaries indicating the need for closer interactions between research institutes. In all agro-ecoregions, livestock has emerged as an important activity, implying thereby the need for considering interactions between crops and livestock while designing R&D strategies. Livestock research should receive more than one-third of the incremental national research resources. Among agro-ecoregions, irrigated and arid eco-regions should receive higher share in research resources.

Pulses comprise an important source of protein for vegetarians. But, per capita consumption of pulses is low mainly due to stagnation in production and availability over the last few decades. Gradually the pulses production is shifting from irrigated to rainfed areas. This has been facilitated by development of short duration and drought escaping varieties. Concerted research efforts are needed to break the yield barriers to increase the production of pulses. Pulses research should receive about 7 percent of the total research resources. Lentil, lathyrus and clusterbean are the main candidates for the incremental research resources.

Sorghum is another important crop in rainfed regions. However, there exists a wide gap in its realised and potential yield, which is largely due to production inefficiency. The mean technical efficiency in sorghum production is about 38 percent. This suggests that there is a considerable scope to raise sorghum production even at existing technology and input use. Dairying, which is an important economic activity in sorghum based production system, also shows a wide gap in its realised and potential yield owing mainly to high incidence of diseases, mineral deficiency, shortage of feed and fodder and poor performance of artificial insemination.

In order to achieve higher research productivity, the efficiency of research system needs to be improved. In a study of 22 crop science research institutes, the mean level of efficiency was estimated to be 55 percent. This, however, varied according to the size of the institute. In general, smaller institutes had higher efficiency. Improvements in the budget allocations particularly towards research contingencies would help improve the efficiency of the research institutes. In another related study, it was observed that evolving partnership between public and private sector research organisations could also help improve efficiency of research. However, the rigidities and the work culture in the public sector research system seem to discourage the partnership of private sector.

It is often mentioned that yields of rice and wheat have started plateauing in the Indo-Gangetic region. This is not true for the entire Indo-Gangetic region. In Lower and Middle Indo-Gangetic plains, there exists considerable scope to accelerate the productivity growth through appropriate technological interventions and management of natural resources. Technological change and expansion of irrigation have contributed to the decline in yield variability in case of both rice and wheat, though, in certain regions in the Indo-Gangetic plains, rice-wheat production system has started showing signs of unsustainability owing mainly to negative externalities of excessive input use. Similar observations have been made for the wheat-sugarcane cropping system in the Indo-Gangetic plains. Diversification towards livestock with appropriate enabling conditions could help improve economic conditions of the farming community.

Minimising the adverse effects of excessive fertilisers and pesticides through implementation of integrated nutrient management and integrated pest management is necessary to improve productivity and conserve natural resources. From a study undertaken to evaluate economic viability of different pest control strategies, it emerged that integrated pest management offers considerable scope to reduce pesticide use without any additional demand on financial resources and adverse effects on crop productivity. The performance of integrated pest management however varied across crops and regions.

The eastern region of the country has lagged behind in the development process. This region accounts for about 37 percent of the country's land area and about half of the total population, and is characterised by high incidence of poverty, low irrigation intensity and low level of infrastructure. The yield of rice, the main crop of the region, is extremely low and has almost been stagnating since last three decades. Technological and policy interventions such as development of varieties suited to this region and creation of irrigation facilities etc. would be helpful in breaking the vicious circle of low productivity and poverty.

Irrigation is a key input in determining the level of agricultural productivity and thereby interregional and inter-farm inequalities. A study undertaken to assess the equity impacts of irrigation policies indicated that though there are wide inter-state variations in irrigation inequality, it has declined over time in many states mainly because of development of surface and ground water resources, initiation of watershed related conservation programs and institutional reforms in irrigation sector.

In the context of domestic and international trade reforms, a study was undertaken to suggest suitable trade policies for improving the performance of Indian agriculture. The share of India in world rice trade has increased after liberalization. Wheat trade fluctuated violently, which indicates need for suitable trade policies to stabilise domestic price. International prices are highly volatile and if transmitted to domestic market would cause uncertainty in agricultural incomes. Indian farmer being poor, cannot adjust the cropping pattern to such volatility. Since, under WTO obligations such shocks cannot be checked through Quantitative Restrictions, there is a need to evolve an appropriate tariff structure and monitor it closely to regulate unwanted imports.

Livestock sector of India is considered to be a sleeping giant and can play a significant role in international trade. India has competitive edge in meat and meat products, but it lacks competitiveness in dairy products owing mainly to processing inefficiency and high level of production and export subsidies in Western Europe and United States. On the other hand, domestic demand for livestock products is expected to grow faster. The demand for milk and meat by 2020 is estimated at 147 and 14 million tonnes, respectively. The demand can be met if the current production trends continue. Productivity of livestock is much below the world average and technology will have a crucial role in improving the productivity. In the past, the productivity of livestock has improved considerably owing to technological change and improvements in feed and fodder availability. These improvements have however remained confined to cattle and poultry. Nonetheless, these have helped improve the availability of milk and eggs by bringing down their real prices.

Over the time, the Centre has strengthened its collaborative research program with both national and international research institutes. In the year under reference, four Policy Papers, two Policy Briefs, one Workshop Proceeding and three PME Notes, have been published. Centre's staff has also been involved in a number of professional and policy interactions. All these have provided the much needed capacity to make greater impacts in the coming years.

I Introduction

The National Centre for Agricultural Economics and Policy Research (NCAP) was established by the Indian Council of Agricultural Research (ICAR) in March 1991, to strengthen agricultural economics research in the National Agricultural Research System comprising ICAR, it's affiliated institutions and the state agricultural universities (SAUs). The mandate of the Centre includes:

- Policy oriented research on: (i) technology generation, diffusion and impact; (ii) sustainable agricultural production systems; (iii) interaction between technology and other policy instruments like incentives, investments, institutions, trade, etc. and (iv) agricultural growth and modelling.
- Strengthen agricultural economics research and teaching capability in the state agricultural universities and ICAR institutes.
- Enhance ICAR participation in agricultural policy decisions through policy-oriented research and professional interactions.

Location

The Centre is located at the campus of the Indian Agricultural Statistics Research Institute (IASRI), a sister institute of ICAR, and is adjacent to the Indian Agricultural Research Institute (IARI), a premier research institute in the country. This offers locational advantage to the Centre in terms of opportunities for interdisciplinary interaction as well as access to library, computational facilities and other infrastructure available at these institutes.

Faculty

The Centre has at present nineteen scientists. This includes the Director, one National Professor, four Principal Scientists, three Senior Scientists and ten Scientists

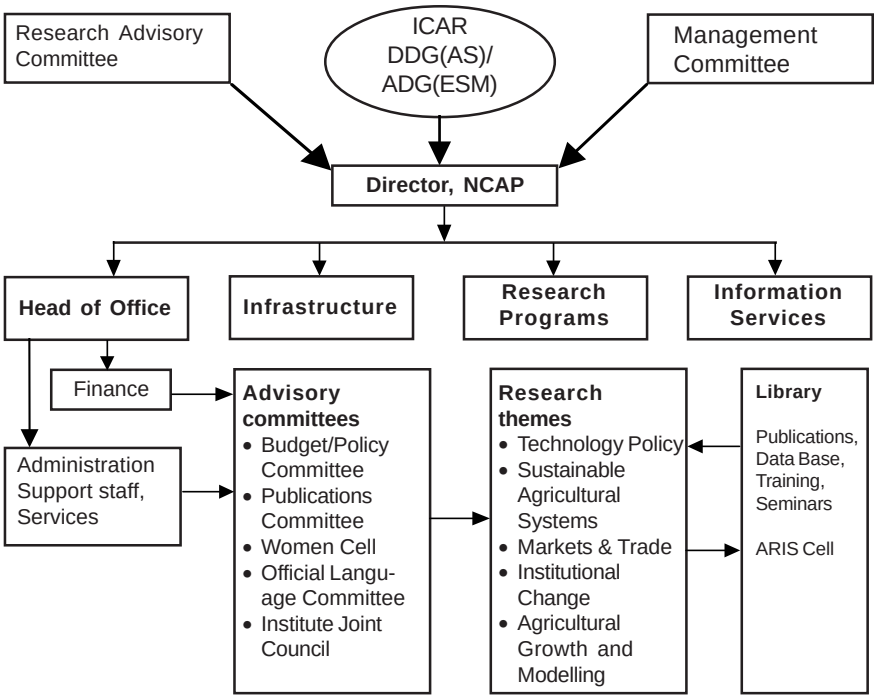
Management

A high-powered Research Advisory Committee (RAC), comprising mostly eminent professionals outside the ICAR system, guides the Centre in its research policies. Prof. Y.K. Alagh, former Minister of State for Power and

Science and Technology, Government of India and presently Member of Parliament (Rajya Sabha) was the first Chairman of the RAC. Currently, Prof. S.S. Johl, an eminent agricultural economist, is the Chairman. Planning, research thrusts and strategies, initiatives in human resources development, approaches to improve policy dialogues and evaluation, are being guided by the RAC.

The Centre is supervised by the Management Committee (MC), as constituted and mandated by the Council. A number of internal committees, such as Staff Research Council, Budget Committee, Academic Planning & Policy Committee, Scientists' Evaluation and Development Committee, Purchase Committee, PME/NATP Site Committee, Official Language Committee, Library Committee, Publications Committee, Consultancy Processing Cell, Grievance Cell and Women Cell have been constituted for decentralised management. The Institute Joint Staff Council promotes healthy interaction and proper work environment.

Organogram of NCAP



II Research Achievements

Research in the Centre is organised into 5 theme areas, viz., Technology Policy, Sustainable Agricultural Systems, Markets and Trade, Institutional Change, and Agricultural Growth and Modelling. Research achievements under different theme areas of the Centre during the year are given below.

TECHNOLOGY POLICY

Delineation and Characterization of Agro-Ecoregions

Raka Saxena, Suresh Pal and P.K. Joshi

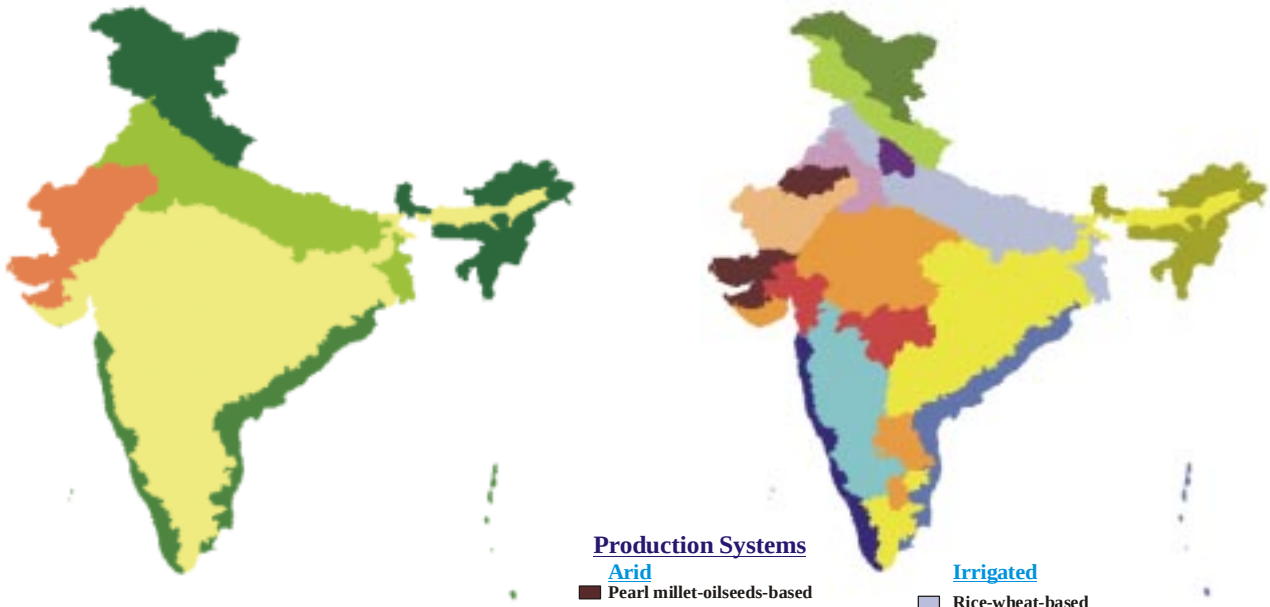
Enormous diversity in agro-climatic, economic and socio-cultural environments in India necessitates delineation of the country into homogeneous regions for proper planning of agricultural research and to maximize benefits therefrom. This study has delineated the country into five agro-ecosystems viz. Arid, Coastal, Hill & Mountain, Irrigated and Rainfed, with a number of production systems therein (Maps 1). The delineated agro-ecoregions and production systems cut across administrative boundaries. This suggests the need for closer linkages between research institutions, particularly State Agricultural Universities. Characterization of the agro-ecosystems and production systems reveals substantial contribution of livestock in all the agro-ecoregions and production systems, and therefore, suggesting the need to consider crop-livestock interactions in research and development strategies. The research strategies however may differ across regions depending on the input-output relationships.

Aggregate Level Priority Setting for Optimum Resource Allocation

Suresh Pal, Raka Saxena and P.K. Joshi

An attempt has been made to allocate research resources more objectively across agro-ecoregions and production systems. The proposed allocations are based on congruence approach, which takes into consideration the multiple research objectives of efficiency, equity and sustainability. The results suggest reallocation of NATP research resources across various agro-ecoregions.

Map 1: Agro-ecological zones and production systems



Irrigated agro-ecoregion should get 9 percent more of the research resources (Figure 1). Further, results suggest that about half of the research resources should be allocated to livestock sector in Arid agro-ecoregion. Similarly, about 30 percent of research resources should go to horticultural crops in Coastal agro-ecoregion (Table 1).

Figure 1: Existing and normative allocation of resources (percent)

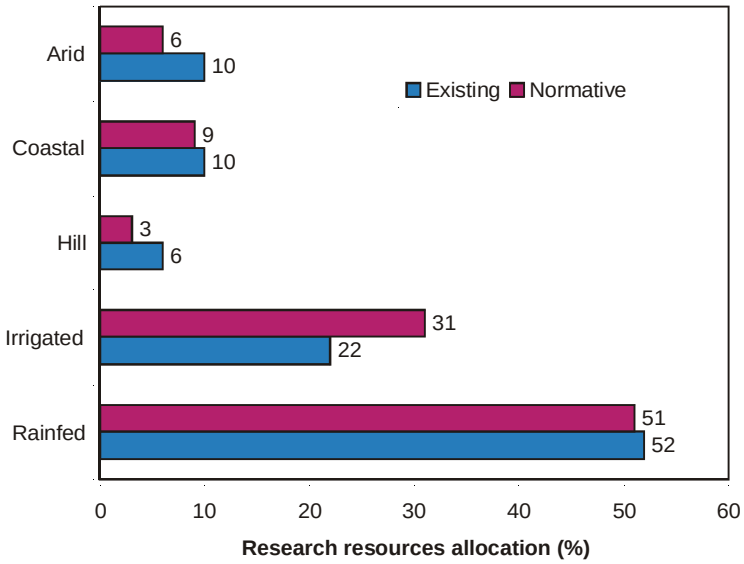


Table 1: Research resources allocation across agro-ecoregions and commodity groups (percent)

Commodity	Agro-ecoregions					Overall
	Arid	Coastal	Hill	Irrigated	Rainfed	
Cereals	17	37	38	38	26	31
Pulses	4	1	neg.	3	6	4
Oilseeds	24	5	2	4	13	10
Livestock	51	21	44	39	34	36
Horticulture	2	30	10	8	11	11
Other crops	2	6	5	8	10	8

Opportunities in Pulse Production

P.K. Joshi and Raka Saxena

This study investigates opportunities in pulses production and examines their shifts in new production domains using state level data, covering a period of three decades. Total pulse production in India during 1997-98 was about 13 million tonnes, coming from 23 million hectares. Chickpea, pigeonpea, blackgram and greengram occupied nearly 76 percent of total area and contributed about 80 percent to total pulses production. Total production of pulses over the last two decades however has increased marginally. A large share in the increased production came from blackgram (39 percent) followed by greengram (21 percent), lentil (20 percent) and chickpea (17 percent). Evidences suggest that farmers have been shifting towards relatively shorter duration pulses like blackgram, greengram and lentil in place of long duration and medium duration pulses like pigeonpea, horsegram and lathyrus (Figure 2). The shorter duration pulses have advantage of escaping terminal drought, and in some cases avoid infestation of insect pests. As new crops are emerging, so are the new areas. A shift in pulses production from northern and eastern states to central and western states is taking place (Figure 3). Southern states are also coming forward in pulses production.

Prioritization of Pulses Research

P.K. Joshi and Raka Saxena

Supply of pulses is short of demand in India. To increase production of pulses, research resources need to be allocated more efficiently across different pulses and states. The study aims at examination of existing and normative allocation of research resources. Amongst various commodity groups, pulses should receive 7 percent of research resources. Existing and normative allocation of research resources across different pulses are given in Table 2. Some reallocation of incremental resources across commodities is desirable. Prioritization across states indicates more resources for pulse research to Madhya Pradesh, Orissa, Rajasthan and Maharashtra. In case of chickpea, 70 percent incremental resources should be allocated to four states, namely, Madhya Pradesh, Maharashtra, Rajasthan, and Uttar Pradesh.

Figure 2: Pulse production: Major contributing pulses

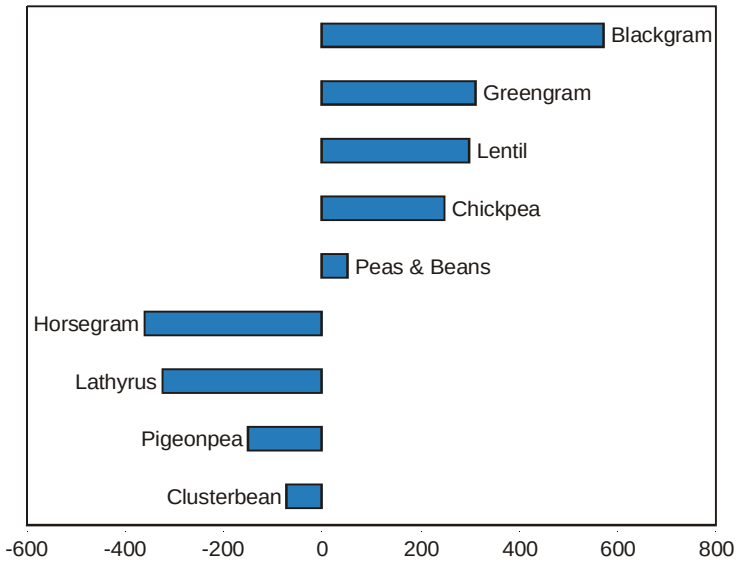


Figure 3: Pulse production: Major contributing states

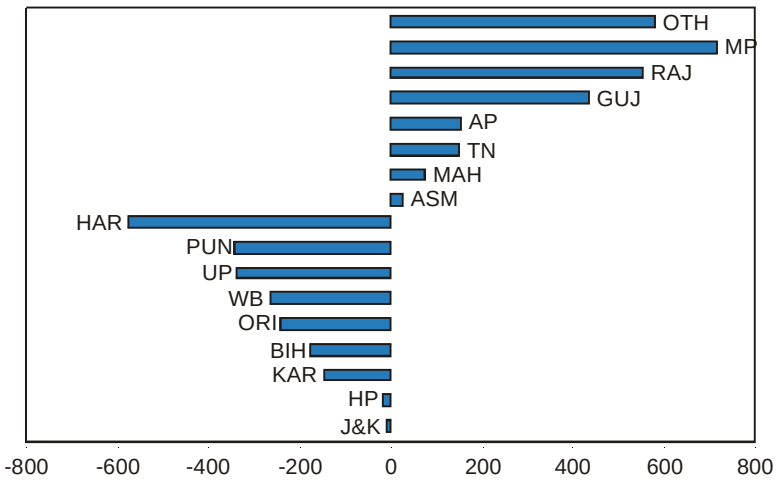


Table 2: Existing and normative resource allocation across different pulses (percent)

Commodity	Normative allocation		Existing	Deviation allocation
	I	II		
Chickpea	35	25	24	+1
Pigeonpea	23	16	21	-5
Blackgram	12	8	14	-6
Greengram	10	9	12	-3
Peas & beans	5	4	7	-3
Lentil	6	17	7	+10
Lathyrus and clusterbean	9	21	15	+6

I : 100 percent weight given to efficiency

II : 40 percent weight given to efficiency, 20 percent weight given to each indicator, namely, sustainability, exports and imports.

Total Factor Productivity of Rice and Wheat in Indo-Gangatic Plains

P.K. Joshi, Laxmi Tewari and B. C. Roy

Total factor productivity of rice and wheat in Indo-Gangetic Plains (IGP) has been estimated for the period of 1966-67 to 1995-96. Indo-Gangetic plains are divided into four agro-ecological zones: (i) Trans-Gangetic plain, (ii) Upper-Gangetic plain, (iii) Middle-Gangetic plain, and (iv) Lower-Gangetic plain. Each of these is further divided into sub-zones depending upon soil and agro-climatic conditions.

The impressive performance of TFP resulted in quantum jump of rice and wheat production during 1967-96. Rice production has increased by 34 million tonnes and wheat production by 48 million tonnes between 1966/67 and 1997/98. Trans-Gangetic and Lower-Gangetic plains contributed about 67 percent to increased rice production. In case of wheat, about 70 percent increased production came from Trans-Gangetic and Upper-Gangetic plains.

Yield growth rates of rice and wheat however has become more input based. Use of modern inputs in Indo-Gangetic Plains has already been achieved to a very high level. The organic sources of nutrients like organic manure have

declined. The negative and stagnating growth in TFP is a matter of concern (Table 3). Deceleration in productivity will influence the cost of production and adversely affect the profitability. Input based yield growth rate may not be sustained if further technological innovations do not occur.

Table 3 : Growth rates in total factor productivity of rice and wheat in different agro-ecoregions (percent /annum)

Agro-ecoregion	Rice			Wheat		
	1966-76	1977-86	1987-96	1966-76	1977-86	1987-96
Trans-Gangetic plains						
Foothills of Shivalik	8.22	0.93	2.03	5.12	0.30	0.28
Plains	9.00	2.79	0.82	2.41	-3.23	-3.77
Arid	13.26	5.44	3.27	3.52	0.29	-0.57
Upper-Gangetic plains						
North western plain	1.12	-1.97	-8.62	1.43	-0.51	-8.26
South western plain	0.72	-0.47	6.33	1.59	-1.03	-8.72
Central plain	1.04	-1.05	-3.31	3.23	-0.63	-8.90
Middle-Gangetic plains						
Eastern plain	2.07	3.15	0.26	6.65	-1.55	-9.99
Vindyan	1.52	-1.48	3.79	3.34	-0.88	-18.79
South Bihar plain	1.84	-6.06	-5.73	2.55	-2.11	-1.06
North Eastern plain	1.12	0.87	-1.84	1.37	0.22	-8.85
N. Bihar plain	4.43	-2.66	-4.60	4.10	-2.96	-1.65
North east plain	5.81	-7.06	0.30	0.68	-3.57	-5.22
Lower-Gangetic plains						
Barind plain	0.35	1.99	-0.74	29.46	-6.06	-12.49
Central alluvial plain	0.88	2.20	0.12	19.87	-2.26	-10.46
Rorh plain	-1.27	0.32	-0.52	15.32	-0.26	-9.16
Alluvial coastal saline plain	-0.58	0.76	-1.15	26.25	-1.99	-12.93

Future Sources of Growth in Production of Rice and Wheat in Indo-Gangetic Plains

P.K. Joshi, Laxmi Tewari and B. C. Roy

A study was undertaken to assess the future sources of growth in Indo-Gangetic plains. Different regions were delineated based on the rate of growth in productivity and level of productivity. About half of rice and wheat area has yield levels less than 2.0 tonnes/ ha and 2.5 tonnes/ ha, respectively (Table 4). These areas are largely confined to Middle and Lower-Gangetic plains. In these areas, farmers are yet to fully exploit the technological potential. Infrastructural development is also weak in low growth regions. Both high and low growth regions offer opportunities to increase production. But they require different technological solutions and research strategies.

Table 4: Rice and wheat area according to yield levels and yield growth rates (percent)

Yield (tonnes/ha)	Annual growth rate		
	> 2 percent	< 2 percent	Total
Rice			
> 3	3.84	5.00	8.84
2.5-3	3.20	8.52	11.72
2-2.5	20.25	9.59	29.84
< 2	25.29	28.01	53.30
Total	50.00	50.00	100.00
Wheat			
> 3	21.00	15.00	36.00
2.5-3	8.00	8.00	16.00
2-2.5	22.00	14.00	36.00
< 2	9.00	3.00	12.00
Total	60.00	40.00	100.00

Techno-Economic Evaluation of Potential Pest Control Strategies

Pratap S. Birthal

Integration of biotechnological inputs with the existing pest control methods is intended to reduce use of chemical pesticides without demanding additional financial resources and affecting the crop yields. To test the hypothesis, experimental data on cotton, paddy and chickpea from different locations were analysed. The results provided a mixed picture. In case of cotton in Gujarat, use of biotechnological inputs alone as well as in an integrated mode was found to have a better yield saving potential over chemical control strategy. In Tamilnadu, biotechnological inputs proved effective when used in conjunction with chemical pesticides. While in Punjab, chemical pest control strategy retained its superiority. Similar trends were obtained on evaluation of these strategies for their comparative economic advantage. In chickpea, on the other hand, integration of biotechnological inputs with chemical pest control emerged as a better option technically as well as economically. In case of paddy, use of biotechnological inputs alone did not show any advantage over chemical pest control. However, conjunctive use of biotechnological inputs and chemical pesticides proved better over chemical pest control strategy, technically as well as economically.

These findings have some important implications for research and palnt protection policy. First, there is a need to standardise the technology considering the level of pest infestation and agro-ecological conditions. Development of pesticide resistance in living organism based pest control inputs would help increase their efficacy further. Secondly, at present, markets for these products are limited and imperfect. Current prices donot seem to provide much incentives to adoption of these inputs. The research institutions as well as the industry should aim at reduction in cost of production of such inputs through commercial production.

Technical Efficiency in Sorghum Production

A.K. Jha, P.K. Joshi and Suresh Pal

Sorghum is an important crop occupying 16.4 percent area in the country and 31.7 percent area in the Sorghum-based Production System (SPS). Nearly

36 percent of the sorghum area in SPS falls under *kharif* sorghum and rest is under *rabi* sorghum. The corresponding production figures are 57 and 43 percent, respectively. There exists a wide gap between actual and potential yields, which perhaps could be due to technical inefficiency at the farm level. Based on cross-section farm survey data from 160 sample farms in the districts of Mehboobnagar (Andhra Pradesh) and Solapur (Maharashtra), an attempt was made to estimate the technical efficiency in sorghum production.

Nearly 57 percent of the difference between realized and potential yield is due to prevailing inefficiency. However, the difference in efficiency of *rabi* sorghum producing farms is even more apparent. In this system, nearly 78 percent yield gap is due to inefficient performance of the farms. The mean technical efficiency in *kharif* as well as in *rabi* sorghum production is only about 38 percent. This suggests considerable scope to improve technical efficiency and thereby sorghum production even at existing level of technology and input use.

Dairy in Sorghum-Based Production System

A. K. Jha, P. K. Joshi and Suresh Pal

Dairying is an important activity in Sorghum-based Production System (SPS). However, it is fettered with several technical and socioeconomic constraints. Gap in milk yield has been estimated as high as 88 percent in indigenous cows, 55 percent in buffaloes and 37 percent in crossbred cows. Animal health and nutrition related problems reduced the yield potential of a crossbred cow by 0.58 tonnes a year accounting for 68 percent of the yield gap. Chronic nutrient deficiencies, fodder scarcity and inferior feed quality are some other factors responsible for such a wide gap. Lower conception rates, failure of artificial insemination and incidence of diseases like *Foot and Mouth disease (FMD), Anthrax, Mastitis, T. thilerasis* and *Hemorrhage Septicemia (HS)* are the other critical constraints in cattle production. But, nutrient deficiency is the prime reason for wide yield gap in indigenous cattle. In buffaloes, poor stall-feeding, failure of artificial insemination, *FMD*, *mastitis*, frequent miscarriage, *prolapse* and *HS* are common constraints. The value of milk lost due to different constraints is to the tune of Rs. 42 crores per annum in this system. Thus, research projects addressing the problems of nutrient

deficiency, failure of artificial insemination, *FMD, etc*. need to be accorded high priority.

Efficiency in Crop Sciences Research

A.K. Jha, P.K. Joshi and Suresh Pal

Public-funded research in India is facing a more stringent situation today. At present, while the ICAR is promoting a new culture in its functioning and taking more and more objective decisions, evaluation of productivity and technical efficiency may be a matter of interest to the research managers. The technical efficiency, which is a ratio of the observed and frontier output of a research organisation satisfying *ceteris paribus* condition, is a useful tool for assessing the performance. This study attempts to measure the technical efficiencies of 22 crop science institutes of the ICAR using stochastic production function, which captures the random effects outside the control of decision maker as well as estimates deviations from the frontier due to inefficiency. Based on the list of publications of the Institutes alongwith their budgets and scientific cadre strength, efficiencies have been worked out. In order to ensure quality work only published research articles in national and international and journals are taken as indicators of scientific productivity. Assigning suitable weights, an average index of productivity score was prepared. Applying dummy for size of Institute, scientist productivity score was regressed on per scientist budget of the institutes.

Preliminary results indicate mean efficiency level of the crop sciences Institutes of the ICAR at 55 percent (Table 5). The value of lambda indicated that 69 percent of the difference in the efficiency of the crop science research was due to technically inefficiency in the concerned institutes. The rest of the inefficiency might be due to reasons beyond control of the research managers at the institute level. Higher availability of funds per scientist has a positive impact on scientific productivity. However, size of the Institute was negatively associated with research productivity. This has important implications for deciding appropriate size of the institutes.

Table 5: Estimates of stochastic frontier production function

Variable	OLS	MLE
Constant	-1.6882*	-1.2768
	(0.5509)	(0.8310)
Budget (Rs. lakh / Scientist)	0.9419*	0.93656*
	(0.2524)	(0.3133)
Size dummy	-0.5362**	-0.4817
(1 for big institute, 0 otherwise)	(0.2570)	(0.3473)
$\sigma^2(v)$	-	0.13605
$\sigma^2(u)$	-	0.3061
λ	-	1.4999
γ	-	0.6923
σ	-	0.6649
R^2	0.4543	-
Log-likelihood	-15.7893	-15.6913
Number of alterations	-	11
Number of observations	22	22

* Significant at 1 percent probability level.
Figures in parentheses are standard error

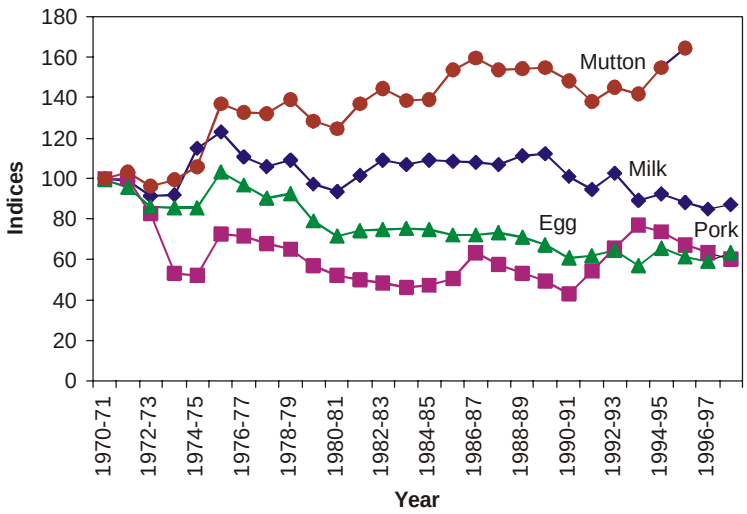
Technological Change and Livestock Product Prices

Pratap S. Birthal

In the livestock sector, significant research advances have been achieved in areas of animal breeding, nutrition and health over the last few decades. And, technologies such as genetic improvements coupled with improvements in feed-fodder availability have accelerated growth in livestock productivity and production, which influenced the prices of livestock products. Figure 4 shows the behavior of real wholesale prices of mutton, milk, pork and egg since 1970-71. The real price of milk has been on a declining trend since 1970s though with marginal fluctuations. Prices of egg have declined sharply. The price of pork too has been declining. On the other hand, the price of mutton has been on a rising trend. It may be

noted that there has been significant growth in milk, egg and pork production partly due to improvements in productivity or technological changes since early 1970s. The mutton output though has increased at a significant rate; improvements in productivity of small ruminants have almost remained static. These trends clearly demonstrate that wherever there have been improvements in productivity, the real prices of their products have declined.

Figure 4: Trend in real wholesale prices of livestock products



SUSTAINABLE AGRICULTURAL SYSTEMS

Sustainability of Rice and Wheat in Indo-Gangetic Plains

P.K. Joshi, Laxmi Tewari and B. C. Roy

Rice-Wheat Cropping System (RWCS) is one of the most productive systems in India. The system has significant historical contribution in making India food secure and self-sufficient. The system contributes about 50 percent to the food grain production, and more than 75 percent to the total food grain

procurement. The system however has started showing signs of fatigue due to several ecological problems such as depletion/pollution of ground water resources, soil salinity and waterlogging, nutrient mining, incidence of insect pests and weeds, and loss of bio-diversity. The present study measures the temporal and spatial variations in the sustainability status of the RWCS. Radar approach has been used by amalgamating economic objectives and resource conservation factors. Growth in production, yield levels and yield stability are the criteria considered for maximizing the economic objectives. Share of groundwater in net irrigated area, degraded land and Simpson index of biodiversity are taken as proxy for environmental indicators.

A larger area under rice and wheat in the system is showing clear signs of unsustainability (Map 2). It is estimated that about 62 percent of the rice area and 53 percent of the wheat area is not sustainable. It may be mentioned that the unsustainable sub-regions contribute about 55 percent to both rice and wheat production in IGP. Their share in increased rice and wheat production since introduction of green revolution technologies has been nearly 50 percent. The production increase has now been constrained due to plateauing of rice and wheat yields and limited scope of area expansion. In Trans-Gangetic and Upper-Gangetic plains, overexploitation of groundwater and declining biodiversity are responsible for unsustainability. Nonetheless, there exists considerable scope to raise yield levels in the Middle and Lower Gangetic plains through technological interventions and management of natural resources.

Growth and Sustainability of Agriculture in Eastern India

B.C. Barah

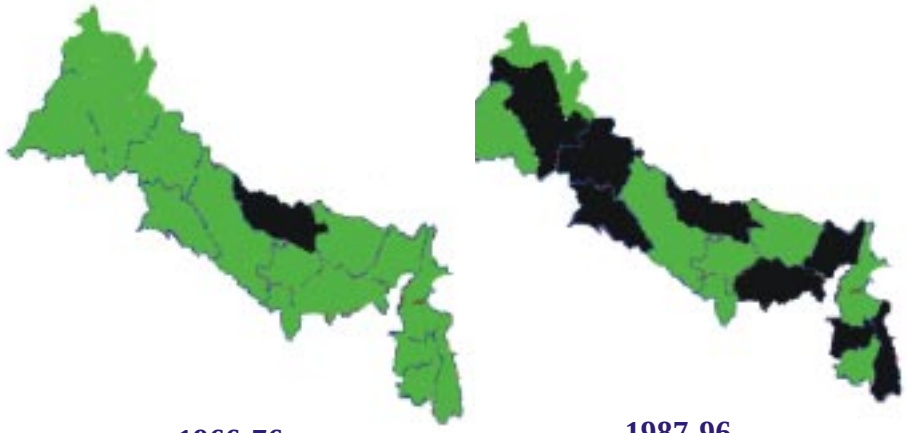
Eastern region of the country comprising of 8 states and covering 37 percent of the land mass with about half a billion population has been bypassed in the process of agricultural development. About 60 percent of the total cropped area remains rainfed. Population below poverty line ranges between 40 to 58 percent across different states. The infrastructure development index of the eastern India is below the all India average.

Map 2: Sustainability status of rice and wheat system.

Rice

1966-76 **1987-96**

Wheat

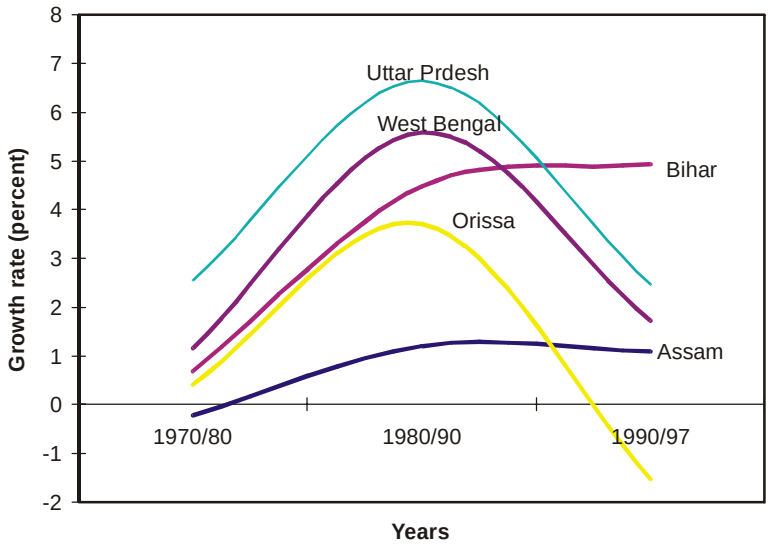


1966-76 **1987-96**

Sustainable region Unsustainable region

Rice is the major crop occupying 64 percent of the area. The productivity of rice is the lowest (1257 kg/ha for irrigated rice and 884 kg/ha for rainfed rice). The pattern of growth of agriculture in eastern India shows that during 1980s, the rice yield reached a satisfactory level, but unfortunately the same has fallen considerably during 1990s. The incremental gains in yield over the last three decades range from as low as 1 kg/ha per annum to 23 kg/ha per annum across different states. Except West Bengal and eastern parts of Uttar Pradesh, yield improvements are unsatisfactory (Figure 5). This is a serious concern for the region's food security.

Figure 5: Productivity growth scenario in Eastern India



Equity Impacts of Irrigation Distribution Policies

S. Selvarajan

Temporal distribution of inequality under current and Rawlsian distribution for 17 states is analysed with five farm size classifications at two points of time that is 1970/71 and 1990/91. There are wide inter-state variations in the level of inequality in the current distribution of flow and lift irrigated area across five

farm size classifications among different states. In 1970/71, highest inequality was recorded in Bihar and least inequality level in the distribution of irrigation was observed in Maharashtra. In 1990-91 maximum inequality was observed in Kerala and least in Gujarat. States have undergone changes in inequality over these two decades depending on the level of surface and ground water development, and other watershed related conservation programs.

The potential reduction in the inequality of irrigated area distribution following the Rawlsian approach in different states indicates some variation but consistently, the level of inequality comes down significantly in all the states. Least inequality in the Rawlsian approach is recorded in Madhya Pradesh. The scope for minimizing the inequality in the distribution of irrigated area across states is thus quantified and assessed by comparing the existing distribution of flow and lift irrigated area with the Rawlsian approach to the distribution of canal irrigated area. Ongoing institutional reforms in surface irrigation sector with the formation of water user's associations for decentralized management and use of water, in states like Haryana, Andhra Pradesh, Orissa, Tamil Nadu, Rajasthan, Uttar Pradesh and Rajasthan will help in minimizing such gaps to a large extent.

MARKETS AND TRADE

Equity Driven Trade Policy and Strategies for Indian Agriculture

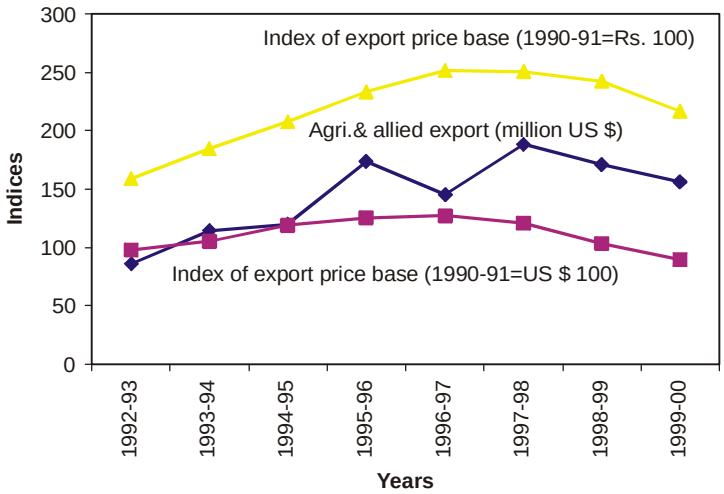
Ramesh Chand

India has emerged as a major exporter of rice and its share in global rice trade has reached about 20 percent in some years due to liberalisation of exports. The trade in wheat shows violent year-to-year fluctuations. In some years, country exported huge quantity, while in others, it had to go for massive imports. The study showed that export surpluses of wheat were of very transitory nature and their disposal as export necessitated huge imports subsequently, to stabilise domestic prices and to meet domestic requirement.

In recent years, international prices of agricultural commodities have plummeted to a very low level. This has hit India's agricultural exports, which had been rising at a fast rate after initiation of economic reforms programme.

International prices show very high volatility (Figure 6). If such shocks are transmitted to farm level, these would destabilise cropping pattern and cause uncertainty in farm income. Since vast majority of Indian farmers are either small or marginal, they do not have resources and capability to shift from one kind of crop pattern to another swiftly. Under WTO obligations, such temporary imports and shocks can't be checked through quantitative restrictions (QRs). There is a need for alertness to impose appropriate tariffs to regulate unwanted imports.

Figure 6: Indices of India's agricultural export in US $ and international agricultural prices in US $ and Indian rupee (base 1990=100)



Export Competitiveness of Livestock Products

Anjani Kumar

Export competitiveness of selected livestock products has been examined by computing nominal protection coefficient (NPCs). Butter has not been competitive internationally after triennium ending (TE) 1982. Although milk prices in India are significantly lower than in the United States and Western Europe, dairy product prices are considerably higher than the international prices. This may be attributed to the domestic processing inefficiencies in

India and high degree of production subsidises in the United States and Western Europe. India also lacks international competitiveness in poultry products though it was price competitive in TE1991. There has been an increase in NPCs after reforms and at present domestic price of poultry meat is about 50 percent higher than the world prices. Export of beef has been highly export competitive. Mutton and pork were not competitive initially, but became price competitive off late (Table 6).

Table 6: Nominal protection coefficients (NPCs) of selected livestock commodities in the global markets

Year/Item	Butter	Beef	Mutton	Pork	Poultry meat
1980-82	0.856	0.367	1.192	1.253	-
1983-85	1.262	0.414	1.012	1.162	-
1986-88	1.473	0.402	0.991	0.975	-
1989-91	1.532	0.176	0.825	0.314	0.988
1992-94	1.850	0.162	0.627	0.211	1.045
1996-98	1.978	0.258	0.795	0.259	1.531

Demand for Livestock Products in India

M.B. Dastagiri

This study estimates effects of income and price changes on demand for livestock products and predicts their demand by 2020. Using consumer expenditure data from 50th round of National Sample Survey Organisation pertaining to 1993-94, a complete demand system for milk, mutton and goat meat, beef and buffalo meat, chicken, egg, fish, other foods and non-foods has been estimated and demand thereof, has been predicted for 2020 (Table 7).

Livestock products exhibit high elasticity and are highly substitutable. The expenditure elasticities of livestock products are high particularly in rural areas compared to urban areas implying thereby acceleration in demand for livestock products in rural areas with rising per capita incomes. Further, the expenditure elasticities of livestock products are higher than other food expenditure

elasticities. This implies that there would be a shift in consumption pattern towards livestock products. This is evident from the demand projections for 2020. Demand for milk and meat is estimated to be 147 and 14 million tonnes, respectively.

Table 7: Demand projections of livestock products towards 2020

Product	1993	2000	2010	2020	Percent annual growth rate (1993-2000)
Milk	46.18	60.77	94.23	147.21	4.77
Mutton & Goat meat	0.83	1.36	3.81	12.72	13.25
Beef & Buffalo meat	0.49	0.61	0.84	1.15	3.39
Chicken	0.25	0.33	0.52	0.81	4.67
Eggs	9.62	13.88	24.79	44.06	6.02
Fish	1.95	1.91	1.79	1.64	-0.64

Note: All products in million tonnes except eggs (billion number)

INSTITUTIONAL CHANGE

Public and Private Sectors in Agricultural Research in India

Andy Hall, Rasheed Sulaiman V., Norman Clark, M.V.K.Sivamohan and B. Yoganand

The study examines the evolving relationship between the public and private sectors in Indian agricultural research and the opportunities for developing a dynamic and institutionally diverse agricultural innovation based system. Case studies conducted in the horticulture sector using the conceptual framework of National Systems of Innovation (NSI) reveal that significant institutional change has started to take place in this sector. The process is led by the private sector. The overwhelming challenge is to successfully engage the

public sector in this process. Despite efforts to reform the system (led by ICAR), institutional arrangements in the National Agricultural Research System has engendered a set of working practices and rigidities that are not always suited to the needs and styles of the private sector. Attempts to contract, both agricultural research institutes and agricultural universities, are plagued by administrative inefficiencies and the narrow professional mandate of the scientists involved. For example, lack of fit with commercial working practices, technology applications and the contingencies of foreign market are the problems in providing technical backstopping to the export horticultural sector. Where contractual arrangements have been put in place, it is difficult to impose sanctions for non-compliance. Mechanisms to make scientists and the organisations responsible for the utility of the service and technologies are also lacking. A related element of this problem is the absence of iterative learning process and particularly institutional learning. Currently there are limitations to the extent to which the public sector can operationally contribute technology and allied R & D capability.

If public sector organisations are going to enter into partnerships with a wide range of organisations, a higher degree of flexibility is required and this must be result oriented. The analytical principles of NSI could make an important contribution to designing a policy framework to foster such collaborative arrangements. A more extensive inventory of organisations and their capabilities is required to develop an overall picture of agricultural innovation system and to identify leverage points and focus the strategic role of the public sector research organisations.

AGRICULTURAL GROWTH AND MODELLING

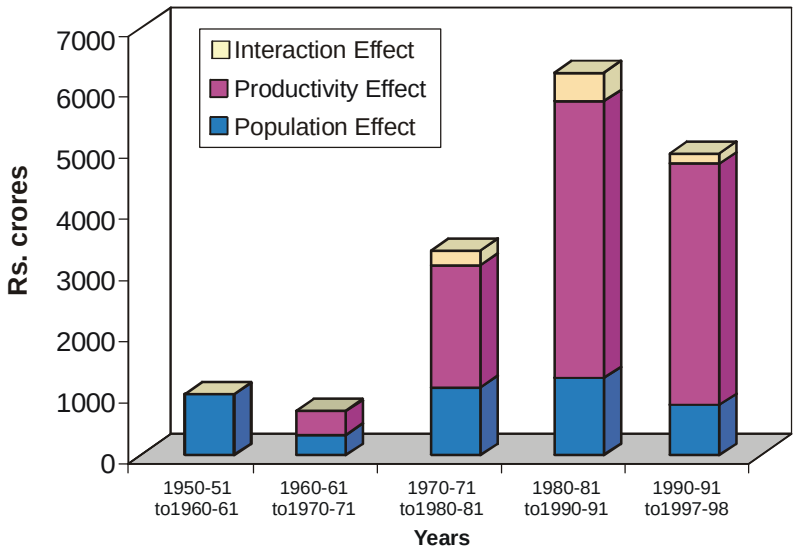
Performance of Livestock Sector in India

Anjani Kumar and Jabir Ali

Livestock sector in India has performed reasonably well considering growth in major components of livestock output. As output is determined by population and productivity, the growth in value of output of livestock sector (at constant prices) has been decomposed into population effect, productivity effect and interaction effect. At all-India level, maximum increase in livestock output has occurred due to increase in the productivity (Figure 7). However,

decade-wise results are more revealing. The growth in the output of livestock sector for the period 1950-51 to 1960-61 was mainly driven by population growth. The contribution of productivity was merely 2.38 percent while the contribution of population was 97.29 percent. There was a reverse trend since then. The contribution of productivity rose significantly.

Figure 7: Sources of growth in livestock sector



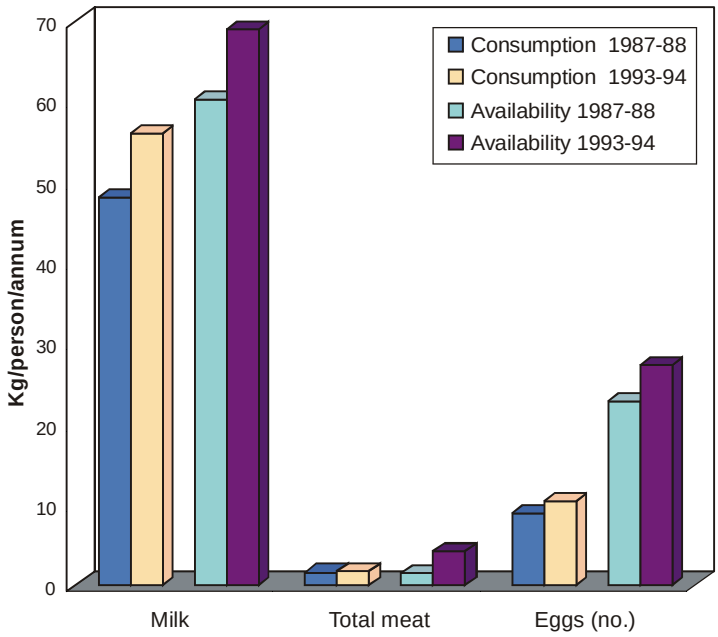
The Puzzle of Livestock Statistics

Anjani Kumar

Data on production and consumption of livestock products present some puzzles. The output availability has been calculated after taking care of trade in livestock commodities. The production figures have been collated from the publications of Directorate of Economics and Statistics, Ministry of Agriculture, Government of India. The data on consumption have been compiled from the NSSO reports. The divergence between the data on availability and consumption of meat and eggs was more than 150 percent. Ideally, both figures should be equal, particularly since there is little processing of these commodities (Figure 8). This poses a question as to which source is to be believed. The purpose of highlighting the problems

of livestock statistics is to make the point that researchers should be careful while using the official statistics. Another purpose is to suggest focus on collection of reliable data on livestock on a continuous basis.

Figure 8: Discrepancies in data on availability and consumption of live stock products



Evolution of Crop-Livestock Systems

Harbir Singh and Sant Kumar

The study analyzes temporal changes in the relationships among households, livestock and crop enterprises. At macro level, the study seeks to demonstrate how irrigation and associated agricultural development results into simultaneous development of livestock and crop sector. The changing relationships between crop and livestock in an agriculturally developed region were examined at three points of time, viz., 1954-57,

1967-68 and 1999-00. It was observed that substantial increase in the net irrigated area (33 to 51 percent) was accompanied by about 80 percent increase in bovine population and about 5 percent decline in ovine population (Sri Ganganagar district of Rajasthan). Substantial increase (315 percent) in ovine population in Jaisalmer district was recorded during 1972-97 on account of comparatively larger grazing area.

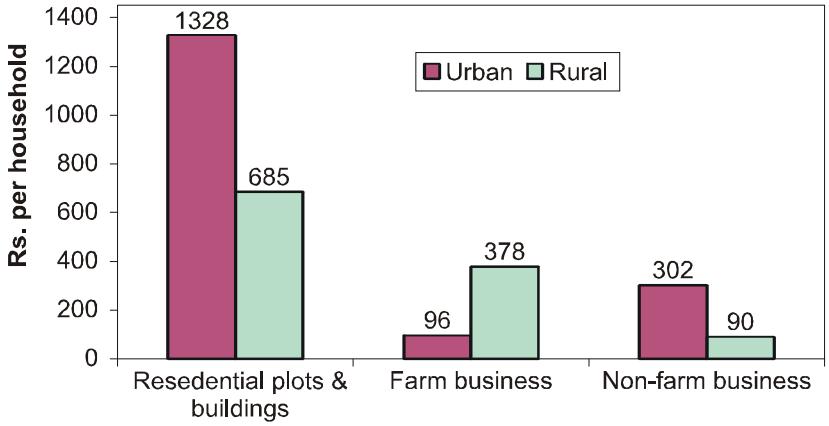
Share of income from livestock in total farm income was 14 percent in 1954-57, which declined to about 8 percent in 1967-68. While in 1999-2000, the share of crop and livestock enterprises was 70 percent and 30 percent, respectively. The declining share of crop enterprises in household income highlights the increasing economic importance of livestock. And at the same time, farm expenditures (excluding rental value of owned land) per farm and per hectare have considerably increased. This might be due to both increase in input prices and increasing importance of modern inputs. Investment on livestock per farm and per hectare has phenomenally increased. The study has clearly shown the increasing interdependence among households, livestock and crop production. Generally, any policy in crop or livestock sector is implemented uniformly either at state or at country level. Such policy implementation may not be much effective keeping in view the regional diversity.

Rural-Urban Linkage through Farm and Non-Farm Investment in India

M.B. Dastagiri and Linu Mathew Philip

One of the important rural-urban linkages takes place through private investment by rural households in non-farm sector and through private investment in farm sector by urban households. On an average, urban households invested Rs. 96 in farm business, while rural households contributed Rs. 90 to capital formation in non-farm business during 1991-92. Investments in farm business by urban households comprised 5.56 percent of their total investment whereas rural households invested 7.8 percent of their total capital expenditure in non-farm business (Figure 9). Among rural households, contribution to capital expenditure in non-farm business was Rs. 99 in the case of cultivators and Rs. 72 in the case of non-cultivators. At all India level, rural households contributed about 10 percent higher resources for capital formation in non-farm sector compared to the contribution of urban households to agricultural sector. Per household investment in farm business by urban households was much higher compared to that of non-cultivating rural households.

Figure 9: Contribution of rural and urban households towards agricultural and non-agricultural capital formation, 1991-92



Constraints in Agricultural Development in Western Uttar Pradesh

G. Singh, Harbir Singh and Rasheed Sulaiman V.

The study shows that irrigated agriculture in general and the dominant cropping systems of Indo-Gangetic plains in particular that is, rice-wheat and sugarcane-wheat, are facing several economic and ecological problems like deceleration in agricultural growth, falling water table and declining size of land holdings. This study attempts to test the hypotheses of stagnation in agricultural economy of district Muzaffarnagar (U.P.), where wheat–sugarcane is the dominant cropping system, and seeks to explore the development alternatives. The district level data shows that during the nineties, there was no significant improvement in the yields of wheat, rice and sugarcane. At the same time, the NPK ratio has shifted away (8.8: 1.1: 0.1) from the optimum combination (4: 2: 1). This is a cause of concern considering its effects on soil fertility in the long run.

Micro level evidences reveal that a majority of the farmers are small and marginal and have scattered holdings. The average holding size is 1.42 hectares. Sugarcane occupies the highest area, followed by wheat and fodder crops. Though the study area falls in the Green Revolution belt, food security seems to be a major concern for marginal and small farm holders. This is

distinctly clear from the inverse relationship between farm size and area under foodgrains (wheat and rice). Irregular canal water and electricity supply, crop damage by wild animals, lack of technical know-how and non-availability of suitable crop varieties are the major constraints in raising farm incomes. Intensity of milch cattle is the highest on marginal farms. On an average, about two milch cattle are maintained by the farm households and about two-third farm households are engaged in milk selling activity. About 75 percent of milk is sold to the local milkmen in the absence of milk cooperatives in the study area. The livestock contributes about 23 percent to total farm income. Among all categories of households, marginal farmers derive 37 percent of their income from livestock enterprise. Non-availability of good quality milch animals, poor veterinary infrastructure, inadequate marketing facilities and lack of artificial insemination and natural services are major constraints in increasing livestock production. Strengthening of extension and training and support services, and diversification in favour of dairying are the suggested interventions.

Changing Pattern of Variability in Rice and Wheat Production

B. C. Roy, P. K. Joshi and Laxmi Tewari

The study was undertaken to analyze the changing pattern of variability in production and yield of rice and wheat in the Indo-Gangetic plains of India. Using district level time series data, the study measured variability and changes therein; decomposed output variability; and identified the determinants of variability. Secular decline in variability was observed both in rice and wheat production since introduction of Green Revolution technologies. The decline is much larger in wheat than in rice. What is worrying is that the reverse trends are now being observed in some parts of the region especially in North Bihar, South Bihar and Vindhyan regions. Variance decomposition analysis indicates that changes in area variability were the most important determinants of changes in production variability during early green revolution period but subsequently yield variability and area-yield interaction became a major source of production variability. The area variability increased only in rice, that too in Trans-Gangetic plains of Punjab and Haryana. It was found that expansion of HYVs has resulted in reduction in yield variability. Expansion of irrigation schemes too reduced both area and yield instability.

PROGRESS UNDER NATP

At present the Centre is running five projects funded by NATP under different modes viz., Organization and Management Reforms mode, Mission mode and Production System Research mode. The emphasis under Organization and Management Reforms mode is on institutionalization of priority setting, monitoring and evaluation. Besides the Centre is encouraging agricultural economics research in a network mode. Attempts have also been made to develop a repository of information in social sciences. A number of SAUs and ICAR institutes have been identified for collaborative research on a continuos basis and in a network mode. Six workshops were conducted at different places in order to strengthen the capacity building of SAUs and ICAR institutes in agricultural economics research and education. During the period, the Centre has published proceedings of a workshop 'ICAR- Industry Interface in Agricultural Research' and three PME Notes under NATP. Besides, the Centre has constituted PME/NATP Cell and NATP Site Committee.

During the year the Centre has focused on delineation, mapping and characterization of agro-ecosystems and production systems, resource allocation across the identified agro-ecosystems and production systems and assessment of priorities for livestock sector. The summary findings of some projects have already been reported under Technology Policy theme. Progress of some other important NATP activities is given below:

Website on Networking of Social Scientists

Rajni Jain

The website on networking of social scientists has been developed to strengthen agricultural economics research in a cost-effective manner through rapid exchange of information, resource sharing and avoiding duplication in research. This website is expected to facilitate more collaborative and multidisciplinary research. The website incorporates information on organisation, personnel, research projects, publications, course curriculum, thesis research from 64 organisations from the ICAR and State Agricultural Universities. The website can be browsed at the address http://agrieconet.nic.in

Dr. M.S. Swaminathan launching website of NCAP

Early Impact of NATP Processes

Raka Saxena, S.K. Pandey, Suresh Pal and P.K. Joshi

A quick assessment was made to examine the early impact of new and innovative processes under NATP, and ascertain how these are facilitating the emergence of a transparent, stakeholder responsive, and efficient research system. A major step in this direction is targeting research for poverty alleviation. The research resources under NATP in the production system mode are allocated to different agro-ecosystems viz., Arid, Coastal, Hill & Mountain, Irrigated and Rainfed. Table 8 shows that incremental research resources should be targeted to rainfed and irrigated areas.

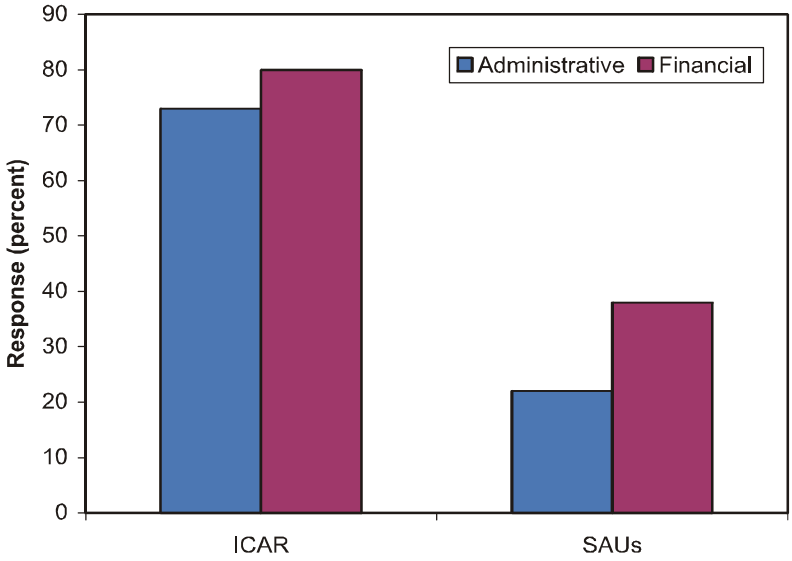
Table 8: Research resource allocation by agro-ecoregions

Agro-ecoregions	Budget allocation (percent of total)	
	Existing NATP	Normative
Arid	10	6
Coastal	10	9
Hill & mountain	6	3
Irrigated	22	31
Rainfed	52	51

The participatory research priority assessment and peer review is given emphasis under NATP. The research proposals submitted to production system research (PSR) mode for funding, are scrutinized by SAP (consisting of eminent scientists from multiple disciplines). The suggestions are made on all aspects of the projects. These include technical content, budget, target domain, HRD needs, duration, manpower requirement, etc. To improve the research efficiency and make larger impact of research investments in the target domains, research focus should be in a system mode by including relevant disciplines and the institutions in the target domains. It also includes socio-economic component to assess the feasibility of the technology and examine the socio-economic constraints for larger impact of research investments. The research quality has improved and research lag has reduced due to financial flexibility and decentralization.

A quick survey undertaken to assess how administrative and financial powers have been delegated in different organizations shows that most of the ICAR institutes have delegated powers to the Principal Investigators and Co-Principal Investigators, their implementation in the State Agricultural Universities is still lacking (Figure 10).

Figure 10: Delegation of administrative and financial powers in ICAR and SAUs



III Education and Training

Education

The Centre provides support to the post graduate research program of Indian Agricultural Research Institute, New Delhi. The guidance provided by the Centre's faculty is indicated below:

Name of the Scientist	Students Guided	Area of Research
S. Selvarajan	Two (Ph.D.)	Irrigation Investment Planning.
		Sustainable Watershed Development Planning.
Suresh Pal	Two (Ph.D.)	Investment in Agriculture.
		Sustainability of Rice-Wheat System.

Special Lectures

Speaker	Title of the Lecture	Venue
Anjani Kumar	Total factor productivity: theory and practice (August 16, 2000)	IARI, New Delhi
	Methodology for computation of TFP indices for Indian agriculture (August 31, 2000)	IASRI, New Delhi
B.C. Barah	Combining time series and cross section data for regression analysis (June, 2000)	IASRI, New Delhi
B.C. Roy	Prioritizing production constraints: concepts, method and application. (June 21-22, 2000)	UAS, Bangalore
Mruthyunjaya	Problems and prospects of agricultural marketing in the coming years (August 24, 2000)	MANAGE, Hyderabad
	Measurement and analysis of TFP in Indian Agriculture (August 26, 2000)	IASRI, New Delhi
	Formulation of research project proposals with special reference to AP Cess Fund (August 26, 2000)	IARI, New Delhi
	Agricultural research management perspective of 21st century (August 29, 2000)	NAARM, Hyderabad
	Prioritization in agricultural research (September, 2000)	Surajkund, Haryana
	Agricultural research management perspectives of 21st century (December 6, 2000)	NAARM, Hyderabad

Speaker	Title of the Lecture	Venue
Mruthyunjaya	Sourcing for research funding for agricultural economics research (January 23, 2001)	IARI, New Delhi
	Globalization and its impact on Indian agriculture (January 30, 2001)	NDUAT, Faizabad
	Research prioritization for agri-business in the context of globalization (February 5, 2001)	International Youth Hostel, New Delhi.
Ramesh Chand	Impact of trade liberalisation on agriculture (March 29, 2000)	ICAR, New Delhi
Suresh Pal	Methodology for computation of TFP indices for Indian agriculture (August 31, 2000)	IASRI, New Delhi
S. Selvarajan	System approach for energy use planning in agriculture research (April 4, 2000)	IASRI, New Delhi
	Economic evaluation of productivity improvements and technical change (August 25, 2000)	IASRI, New Delhi
	Irrigation development strategies for future (September 21, 2000)	IRMED, New Delhi

Guest Lectures at NCAP

Eminent scholars from India and abroad gave seminars on the following topics:

Speaker	Title of the Lecture
Dr. A. Satheesh, University of Arizona, USA	Price risk and supply response: theoretical & practical issues (January 28, 2000)
Dr. Rakesh Chopra, ICM, New Delhi	Winning strategy for success (February 28, 2000)
Dr. Nelson Perera, University of Wollongong, Australia	Data analysis and computational software for social sciences (March 15, 2000)
Dr. Nelson Perera, University of Wollongong, Australia	Co-integration methods (March 16, 2000)
Dr. M. Hussain, IRRI, Philippines.	Hybrid rice (March 25, 2000)
Dr. Jean-Mare Boussard, CIIRAD, France	Peasants efforts to model world food economy (April 6, 2000)
Dr. James G. Ryan, Former D.G. ICRISAT	Research priority setting experience (May 8, 2000)
Dr. Carl E. Pray, Rutgers University, USA	Impact of Bt cotton in China (May 22, 2000)
Dr. Arup Mitra, University of Delhi, Delhi	Total factor productivity (November 11, 2000)
Dr. K. Karemulla, NRC for Agroforestry, Jhansi (U.P.)	An economic diagnosis of agroforestry in U.P. (November 25, 2000)

Training

Scientific & Technical

Name of the Official	Theme	Duration	Place of Training
B.C. Roy	Training on GIS-ARC view software	May 15-16, 2000	NIIT-GIS, New Delhi
Rajni Jain	Training on GIS-ARC view software Oracle 8i with D6i	May 15-16, 2000 January 22-March 5, 2001	NIIT-GIS, New Delhi Sql Star, New Delhi
P.K. Joshi	Training on GIS-ARC view software.	May 15-16, 2000	NIIT-GIS, New Delhi
S. Selvarajan	Training on GIS-ARC view software	May 15-16, 2000	NIIT-GIS, New Delhi
P.A. Laxmi Prasanna	Quantitative techniques for policy analysis in agricultural economics	August 7-September 5, 2000	IARI, New Delhi
P. Adhiguru	Statistical package for social science(SPSS)	August 21-26, 2000	IASRI, New Delhi
Sant Kumar	*Nayi sehstrabadi me rajbhasha niti sankalp*	November 28-29, 2000	NAARM, Hyderabad.
M.S. Chauhan	Development of internet and internet using linux operating system	August 21-26, 2000	CIRG, Mathura

Administrative

Name of the Official	Theme	Duration	Place of Training
M. S. Vashisht	Improving administration and financial management	May 30-June 9, 2000	NAARM, Hyderabad
N. K. Arora	Accounts management/effective audit	June 5-7, 2000	Centre for Research Planning & Action, New Delhi
Ravindra Kumar	Accounts management /effective audit	June 5-7, 2000	Centre for Research Planning & Action, New Delhi
S. K. Yadav	Fundamental supplementary rules, pay fixation and retirement benefits	Aug. 2-4, 2000	Centre for Research Planning & Action, New Delhi
Inderjeet Sachdeva	Fundamental supplementary rules, pay fixation and retirement benefits	Aug. 2-4, 2000	Centre for Research Planning & Action, New Delhi
N. K. Arora	Workshop on FR/SR and financial rules	Sept.14-16, 2000	Institute of Socio-economic Research and Action, New Delhi
M. S. Vashisht	Training on cash and accounts matters	Oct. 19-21, 2000	Centre for Research Planning & Action, New Delhi
M. S. Vashisht	*Nayi sehstrabadi me rajbhasha niti sankalp*	Nov. 28-29, 2000	NAARM, Hyderabad
S.K.Yadav	*Nayi sehstrabadi me rajbhasha niti sankalp*	Nov. 28-29, 2000	NAARM, Hyderabad

IV Awards and Recognitions

Dr. Anjani Kumar:

R.T. Doshi Foundation Award by the Agricultural Economics Research Association (India), New Delhi.

Dr. Mruthyunjaya:

Treasurer, Agricultural Economics Research Association (India), New Delhi.

Vice-President, Indian Society of Agricultural Marketing, Nagpur.

Expert Member, Agro-Economic Research Centre, University of Delhi.

Chairman, Prioritization, Monitoring and EvaluationTask Force, NATP.

Member, Task Force on Agricultural Credit, Xth Five Year Plan, Planning Commission, Government of India.

Member, Committee on Agricultural Marketing, Planning Commission, Government of India.

Member, Sub-group on Resource Mobilization, Planning Commission, Government of India.

Dr. P.K. Joshi:

R.T. Doshi Foundation Award shared with Uttam Kumar Deb and M.C.S. Bantilan, by the Agricultural Economics Research Association (India), New Delhi.

Member, Editorial Board, Indian Society of Agricultural Economics, Mumbai.

Secretary, Agricultural Economics Research Association (India), New Delhi.

Dr. P.S. Birthal:

Member, Executive Committee, Indian Society of Agricultural Economics.

Dr. Rasheed Sulaiman V:

Member, Monitoring and Evaluation of Extension Component of NATP, Ministry of Agriculture, Government of India

Member, ICAR subject matter committee for restructuring PG curricula in social sciences.

V Linkages and Collaboration in India and Abroad including Externally Funded Projects

Visits Abroad

Name of the Official		Purpose	Place	Duration	Outcome
B.C. Barah	To develop a methodological note on analysis of socio economic dynamics of rice production system	IRRI, Philippines	September 4 –21, 2000	Developed the methodological paper for analysis of village level study	
Mruthyunjaya	First meeting of the 'Technical Committee on Agriculture and Rural Development'	Kathmandu, Nepal	July 4-5, 2000	Reviewed the progress and planned activities for 2000-2001	
P.K. Joshi	Participation in a workshop 'Planning and implementation of on-farm chickpea IPM in Nepal'	Kathmandu, Nepal	September 5-9, 2000	Developed work plan for socio- economic research	
Ramesh Chand	Synthesis work of the project on "Trade liberalisation and Indian agriculture"	University of Wollongong, Australia	April-August 2000	Finalised the project report	
Rasheed Sulaiman V.	XXIV International Conference of Agricultural Economists	Berlin, Germany	August 13-18, 2000	Information dissemination	

VI List of Publications

NCAP Publications

Policy Papers

Policy Paper 11:	Emerging Trends and Regional Variations in Agricultural Investments and their Implications for Growth and Equity
Policy Paper 12:	Public-Private Interface and Information Flow in the Rice Seed System of Andhra Pradesh (India)
Policy Paper 13:	Impact of Tenancy Reform on Productivity Improvement and Socio-Economic Status of Poor Peasants
Policy Paper 14:	Irrigation Development and Equity Impacts in India

Policy Briefs

Policy Brief 13:	Coping with New Policy Agendas for Agricultural Research : The Role of Institutional Innovations
Policy Brief 14:	Subsidies and Support in World Agriculture: Is WTO Providing Level Playing Field?

PME Notes

PME Note 5:	Research Priority Setting, Monitoring and Evaluation under NATP
PME Note 6:	Delineation and Characterisation of Agro-ecoregions
PME Note 7 :	The New Glossary of Agricultural Research

Workshop Proceedings

Workshop Proceedings 8:	ICAR-Industry Interface in Agricultural Research

Publications by Scientists

Research Papers

Birthal, P.S., O.P. Sharma and Sant Kumar. 2000. Economics of integrated pest management: evidence and issues. *Indian Journal of Agricultural Economics* 55(4).

Birthal, P.S., O.P. Sharma, Sant Kumar and A. Dhandapani. 2000. Pesticide use in rainfed cotton: intensity, frequency and determinants. *Agricultural Economics Research Review* 13(2).

Dastagiri, M.B. and Linu Mathew Philip. 2000. Rural - urban linkage through farm and non- farm investment in India. *Afro-Asian Journal of Rural Development* 33(1).

Hall A.J., Norman Clark, Rasheed Sulaiman V., M.V.K. Sivamohan and B. Yoganand. 2000. New agendas for agricultural research in developing countries: policy analysis and institutional implications. *Knowledge, Technology and Policy*13(1).

Jha, A. K. and Anjani Kumar 2000. Constraints to adoption of modern varieties of rice in Bihar, eastern India. *Agricultural Extension Review* (forthcoming)

Joshi, P.K. 2000. Education, technology adoption and agricultural productivity – rapporteur's report. *Indian Journal of Agricultural Economics* 55(3).

Kumar, Anjani. 2000. Performance of livestock sector in India: implications for food security. *Afro-Asian Journal of Rural Development* 33(2).

Kumar, Anjani, Harbir Singh and Jabir Ali. 2000. Growth, instability and prospects of livestock trade in India. *The Indian Economic Journal* (forthcoming)

Kumar, Anjani and Harbir Singh. 2000. Growth and instability in exports and imports of livestock products in India. *Indian Journal of Agricultural Marketing* 14(2).

Rasheed Sulaiman V. and Anne W. van den Ban. 2000. Reorienting agricultural extension curricula in India. *The Journal of Agricultural Education and Extension* 7(2).

Rasheed Sulaiman V. and Dayanath Jha. 2000. Determinants of demand for paid farm extension services in India: a discriminant function approach. *Afro-Asian Journal of Rural Development* 35(2).

Roy, B. C and K. K. Datta. 2000. Rice-wheat system in Haryana: prioritizing production constraints and implication for future research. *Indian Journal of Agricultural Economics.* 55(4).

Roy, B. C., T.S. Bhogal, and L. R. Singh. 2000. Tenancy and adoption of new farm technology: a study in West Bengal, India. *Afro-Asian Journal of Rural Development* 33(1).

Sandhu, K.S., V.K. Arora, Ramesh Chand, B.S. Sandhu and K.L. Khera. 2000. Optimizing time distribution of water supply and fertilizer nitrogen rates in relation to targeted wheat yields. *Experimental Agriculture* 36 (1).

Shiyani, R.L., P.K. Joshi, M. Asokan and M.C.S. Bantilan. 2000. Adoption of improved chickpea cultivars in Gujarat: a study in the tribal region. *Indian Journal of Agricultural Economics* 55(2).

Tomar, S.S., Anwar Alam, Rajni Jain and Alka Kalra . 1999. Will agricultural research pause with Y2K?. *Agricultural Situation in India* 56(6).

Tripp, R. and Suresh Pal. 2000. The private delivery of crop varieties: rice in Andhra Pradesh. *World Development* 29(1).

Popular Articles/Leaflets

Chand, Ramesh. 2001. Subsidles and support in world agriculture : Is WTO providing level playing field? *Policy Brief 14,* NCAP, New Delhi.

Hall, A.J., Normen Clark, Rasheed Ssulaiman V., M.V.S. Sivamohan and B. Yoganand, 2000. Coping with new policy agendas for agricultural research: The rate of institutional innovations. *Policy Brief 13,* NCAP, New Delhi.

Jha, D. 2001. The new glossary of agricultural research. *PME Note 7*, NCAP, New Delhi.

Pal, Suresh and A.K. Mittal. 2000. Research priority setting, monitoring and evaluation under NATP*. PME Note 5*, NCAP, New Delhi.

Pal, Suresh, P.K. Joshi and Anjani Kumar. 2000. Agricultural research prioritization: concepts and approach. *ICAR News,* 6(3).

Saxena, Raka, Suresh Pal and P. K. Joshi. 2000. Delineation and characterization of agro-ecoregions. *PME Note 6,* NCAP, New Delhi.

Mass Media

Chand, Ramesh. 2001. Agricultural commercialisation, diversification and trade negotiation. In: *Current Affairs.* All India Radio, New Delhi , March 9.

Books

Johansen, C., J.M. Duxbury, S.M. Virmani, C.L.L. Gowda, S. Pande, and P.K. Joshi. 2000. *Legumes in rice and wheat cropping systems of the Indo-gangetic plain: constraints and opportunities*. International Crops Research Institute for the Semi-Arid Tropics, Patancheru, Andhra Pradesh, India and Cornell University, Ithaca, New York, USA.

Pal, Suresh and P.K. Joshi. 2000. *Priority setting, monitoring and evaluation in agricultural research: selected readings*. NCAP, New Delhi.

Book Chapters/ Reviews/Reports

Ali, M., P.K. Joshi, S. Pande, M. Asokan, S.M. Virmani, Ravi Kumar and B.K. Kandpal. 2000. Legumes in the Indo-gangetic plain of India. In: *Legumes in rice and wheat cropping systems of the Indo-gangetic plain: constraints and opportunities*. Eds. Johansen, C., J.M. Duxbury, S.M. Virmani, C.L.L. Gowda, S. Pande, and P.K. Joshi. International Crops Research Institute for the Semi-Arid Tropics, Patancheru, India and Cornell University, Ithaca, New York, USA.

Chand, Ramesh. 2000. Emerging trends and regional variations in agricultural Investments and their implications for growth and equity. *Policy Paper 11* , NCAP, New Delhi.

Chand, Ramesh. 2000. Agricultural development, growth and poverty in India's Mountain Region. In : *Growth, Poverty alleviation and sustainable resource*

management in mountain areas of South Asia. ICIMOD, Kathmandu, Nepal.

Johansen, C., J.M. Duxbury, S.M. Virmani, C.L.L. Gowda, S. Pande, and P.K. Joshi. 2000. Research and development priorities for legumes and legume-based cropping systems in the Indo-Gangetic Plain. In: *Legumes in rice and wheat cropping systems of the Indo-gangetic plain: constraints and opportunities*. Eds. Johansen, C., J.M. Duxbury, S.M. Virmani, C.L.L. Gowda, S. Pande, and P.K. Joshi. International Crops Research Institute for the Semi-Arid Tropics, Patancheru, India and Cornell University, Ithaca, New York, USA.

Hall, A.J., Norman Clark, Sarah Taylor and Rasheed Sulaiman V. 2001. Institutional learning through technical projects: horticultural R & D systems in India. *AgREN Network Paper No. 111*. ODI Agricultural Research and Extension Network, London.

Haque, T.2001. Impact of tenancy reform on productivity improvement and socio-economic status of poor peasants. *Policy Paper 13*, NCAP, New Delhi.

Joshi, P.K., M. Asokan, K.K. Datta, and P. Kumar. 2000. Socio-economic constraints to legumes production in rice-wheat cropping systems of India. In: *Legumes in rice and wheat cropping systems of the Indo-gangetic plain: constraints and opportunities*. Eds. Johansen, C., J.M. Duxbury, S.M. Virmani, C.L.L. Gowda, S. Pande, and P.K. Joshi. International Crops Research Institute for the Semi-Arid Tropics, Patancheru, India and Cornell University, Ithaca, New York, USA.

Joshi, P.K., Suresh Pal and N.P. Singh. 2000. Impact of agricultural research on poverty alleviation in India. In: *Rural prosperity and agricultural policies and strategies*. Eds. Choudhary, R.C. and R.P. Singh. National Institute of Rural Development, Hyderabad.

Kumar P., P.K. Joshi, C. Johansen, and M. Asokan. 2000. Total factor productivity of rice-wheat cropping systems in India: the role of legumes. In: *Legumes in rice and wheat cropping systems of the Indo-gangetic plain: constraints and opportunities*. Eds. Johansen, C., J. M. Duxbury, S.M. Virmani, C.L.L. Gowda, S. Pande, and P.K. Joshi. International Crops Research Institute for the Semi-Arid Tropics, Patancheru, India and Cornell University, Ithaca, New York, USA.

Mruthyunjaya, Suresh Pal and A.K. Bawa. 2000. ICAR-industry interface in agricultural research. *Workshop Proceedings 8.* NCAP, New Delhi.

Pal, Suresh, Robert Tripp and A. Janiah. 2000. Public-private interface and information flow in the rice seed system of Andhra Pradesh (India). *Policy Paper 12*, NCAP, New Delhi.

Pal, Suresh and S. Pandey. 2000. The nature and causes of changes in variability of rice production in eastern India: a district level analysis. In: *Risk analysis and management in rainfed rice systems.* Eds. S. Pandey et al. International Rice Research Institute, Philippines.

Pal, Suresh, S. Pandey, and Abedullah. 2000. Growth and variability in agriculture revisited: district level evidence of rice production in eastern India. In: *Risk analysis and management in rainfed rice systems*, Eds. S. Pandey et al. International Rice Research Institute, Philippines.

Pande, S.P., C.P. Yadav, K. Sah, S. Pande and P.K. Joshi. 2000. Legumes in Nepal. In: *Legumes in rice and wheat cropping systems of the Indo-gangetic plain: constraints and opportunities*. Eds. Johansen, C., J.M. Duxbury, S.M. Virmani, C.L.L. Gowda, S. Pande, and P.K. Joshi. International Crops Research Institute for the Semi-Arid Tropics, Patancheru, India and Cornell University, Ithaca, New York, USA.

Rasheed Sulaiman, V. and Jiju P. Alex. 2000. Planning for empowerment: lessons from decentralised planning in Kerala, India. In: *New vista in rural development: strategies and approaches*. Ed. R.K. Samantha. B.R.Publishing Corporation, New Delhi.

Selvarajan, S. 1999. Validation of rainfed agricultural typology for India. In: *Increasing livestock productivity in mixed crop-livestock system in South Asia.* Ed. Derrick Thomas, International Livestock Research Institute, Nairobi, Kenya and International Crops Research Institute for the Semi-Arid Tropics, Patancheru, Andhra Pradesh, India.

Selvarajan, S., A. Ravishankar and P.A. Laxmi Prasanna. 2001. Irrigation development and equity impacts in India. *Policy Paper 14*, NCAP, New Delhi.

Presentation in Conferences/Workshops/Symposia

Barah, B.C. 2000. Agricultural production system and environmental sustainability. In the conference: *Sustainable agriculture, poverty alleviation and food security in Asia: the perspectives for the 21st century.* Institute for Development Studies, Jaipur, October 18-20.

Birthal P.S. 2000. Technological change in India's livestock sector and its impact. In the conference: Livestock in different farming systems. Tamil Nadu Veterinary and Animal Sciences University (TNVASU), Chennai. December 28-29.

Birthal, P.S. 2001. Technological imperatives for development of Indian livestock sector. In the workshop: *Documentation, adoption and impact of livestock technologies in India.* International Crops Research Institute for Semi Arid Tropics (ICRISAT), Patancheru. January 18-19.

Chand, Ramesh. 2000. Agricultural development, growth and poverty in India's mountain region. In the conference: *Growth, poverty alleviation and sustainable development in the mountain areas of South Asia* Kathmandu, Nepal, January 31-February 4.

Chand, Ramesh. 2000 Freeing wheat trade: implications for domestic market and economy. In the seminar: *Food security in India*: *the emerging challenges in the context of economic liberalisation.* Institute of Human Development, Delhi, March 25-27.

Chand, Ramesh. 2000. Trade liberalisation, agricultural prices and net social welfare in India. In the conference: *Sustainable agriculture, poverty alleviation and food security in Asia: the perspectives for the 21st century.* Institute for Development Studies, Jaipur, October 18-20.

Dastagiri, M.B. 2000. Demand for livestock products in India: current status and projections for 2020. In the conference: *Livestock in different farming systems*, TNVASU, Chennai. December 28-29.

Hall, A. J., Rasheed Sulaiman V., N. G. Clark, M.V.K. Sivamohan and B. Yoganand. 2000. Public and private sector partnerships in Indian agricultural research: emerging challenges to creating an agricultural innovation system. In: T*he XXIV International Conference of Agricultural Economists*, Haus am Kollnischen Park, Berlin, Germany. August 13-18.

Jain, Rajni. 2000. Networking of social scientists. In the workshop: *Networking of social scientists.* TNVASU, Chennai. December 27.

Jain, Rajni and Alka Arora, 2001. Networking of agricultural scientists. In: *88th Indian Science Congress.* IARI, New Delhi. January 3-7.

Jha, A. K. 2000. Dairy milk production: potential and constraints in sorghum based production system. In the conference: *Livestock in different farming systems.* TNVASU, Chennai. December 28-29.

Joshi, P.K. 2000. Biotechnology and food security. In the panel discussion: *Biotechnology, social choices and food security.* NCAP, New Delhi. May 2.

Joshi, P.K. 2000. Priority assessment in agricultural research: methodological issues. In the workshop: *Prioritization of agricultural research*. National Academy of Agricultural Sciences and the Centre for Advancement of Sustainable Agriculture, Surajkund, Haryana. September 29-30.

Joshi, P.K. 2000. Risk in agriculture – 21st century's perspective. In the seminar: *Agricultural Insurance.* The General Insurance Corporation of India, New Delhi. August 28-31.

Joshi, P.K. 2000. Socioeconomic, institutional and policy issues: constraints in chickpea production. In the workshop: *Planning and implementation of on-farm chickpea IPM in Nepal*. Kathmandu. September 6-7.

Joshi, P. K., Laxmi Tewari and B.C. Roy. 2000. Measuring sustainability of rice-wheat based cropping system. In the conference: *Sustainable agriculture, poverty alleviation and food security in Asia: the perspectives for the 21st century.* Institute for Development Studies, Jaipur, October 18-20.

Joshi, P. K., L.axmi Tewari, and B.C. Roy. 2000. Institutional and policy issues in sustainability of rice-wheat system in the Indo-gangetic plains. In the workshop: *Developing an action program for farm level impact in rice-wheat system of the Indo-gangetic plains*. World Bank and Indian Council of Agricultural Research, New Delhi, September 25-27.

Kumar, Anjani. 2000. Economic liberalization and agricultural exports of India: a macro perspective. In the symposium: *Development policies for the new millennium.* IGIDR, Mumbai. July 12-14.

Kumar, Anjani and Jabir Ali. 2000. Livestock sector in India: a perspective on performance. In the conference: *Livestock in different farming systems.* TNVASU, Chennai. December 28-29.

Kumar, Anjani and Jabir Ali. 2000. Trade in livestock sector in India: trends, performance and competitiveness. In the conference: *Livestock in different farming systems.* TNVASU, Chennai. December 28-29.

Kumar, Anjani and P.S. Birthal. 2001. Economic impact of crossbreeding technology of cattle in India. In the workshop: *Documentation, adoption and impact of livestock technologies in India.* ICRISAT, Patancheru, January 18-19.

Mruthyunjaya. 2001. Research prioritization for agri-business in the context of globalization. In: *Second congress on human ecology*. New Delhi. February 5.

Mruthyunjaya and V.R. Kiresur, 2000. Oilseed research and development-socio-economic setting, In the seminar: *Oilseeds and oils-research and development needs in the millennium.* DOR, Hyderabad, February 2-4.

Roy, B. C., Anjani Kumar and R. L. Shiyani. 2000. Oilseed in rainfed India: prioritizing production constraints and implication for future research. In the seminar: *Oilseeds and oils: research and development needs in the new millennium.* DOR, Hyderabad, February 2–4.

Roy, B. C., R.L. Shiyani and Kalyan Ganguli. 2000. Dairying in rainfed groundnut based production system: prioritizing production constraints and implication for future research. In the conference: *Livestock in different farming systems.* TNVASU, Chennai. December 28-29.

Singh, Harbir and Sant Kumar. 2000. Evolution of crop-livestock systems: some hypotheses. In the conference: *Livestock in different farming systems.* TNVASU, Chennai. December 28-29.

VII List of Approved On-Going Projects

Title of project	Project leader	Year of start	Likely year of termination
Household food and nutritional security for tribal, backward and hilly areas	Mruthyunjaya	2000	2003
Institutionalization of priority setting, monitoring and evaluation in the NARS.	Mruthyunjaya	1999	2003
Resource allocation in agricultural research	D. Jha	2000	2005
The demand – supply projection of livestock products towards 2020 for India and their policy implications	M.B. Dastagiri	1999	2001
Scope of agriculture based intervention for sustainable nutritional security	P. Adhiguru	1999	2001
Analysis of productivity changes and future sources of growth for sustainable rice-wheat system	P.K. Joshi	1999	2002
Impact of agricultural research	P.K. Joshi	2000	2003
Intensification of maize in Asian upland farming systems-policy options for productivity enhancement, environmental protection and food security	P.K. Joshi	2001	2003

Title of project	Project leader	Year of start	Likely year of termination
Agricultural performance in Uttar Pradesh and Uttaranchal: implications for policy and agricultural R&D	P.K. Joshi	2000	2001
Optimizing institutional arrangements for demand driven post-harvest research, delivery, uptake and impact on the livelihoods of the poor through public and private sector partnerships	Rasheed - Sulaiman V.	2000	2003
Socio-economic dynamics of rice production system in eastern India	B.C. Barah	1999	2002
Impact evaluation of integrated crop management in cotton	Sant Kumar	2000	2001
Assessment of research priorities in the Indian livestock sector	P.S. Birthal	2000	2001
Increasing productivity of livestock in mixed crop-livestock systems	P.S. Birthal	2000	2003
Economic potential of biological substitutes for agro-chemicals	P.S.Birthal	1997	2000
Development of small ruminant sector in India	P.S.Birthal	1997	2000

VIII Consultancy, Patents and Commercialisation of Technology

The research programs and outreach activities of NCAP are expanding in view of the increasing demand for socio-economic inputs for policy analysis. The Centre is evolving multiple mechanisms to exploit the existing complementary linkages among national and international agricultural research institutions for providing social science inputs into agricultural technology management. Integrating the research focus on targeted areas with more breadth and depth of coverage is the goal, sought to be pursued, through consultancy and contract research. The consultancy and contract research activities have been formalized as per the Council's guidelines and specifically designed to complement the ongoing emerging research thrusts and also supplement the budgetary resources of the Centre.

Following individual consultancy services and contract research in collaborative mode were provided by the Centre during the year.

Consultancy/Contract Research

Name	Institution to which consultancy/contract research is provided	Areas of consultancy/contract research
P.K. Joshi	ICRISAT, Patancheru	Facts, trends and outlook: report on chickpea and pigeonpea.
Ramesh Chand	CGPRT, Bogor, Indonesia	Trade liberalisation and India's agricultural sector.
	Government of Punjab	Implications of WTO on Punjab and Haryana agriculture.
	IIFT, New Delhi	Export competitiveness of Indian agricultural products.
Rasheed Sulaiman V.	ICRISAT, Patancheru	Optimizing institutional arrangements for demand driven post-harvest research, delivery, uptake and impact on the livelihoods of the poor through public and private sector partnerships.

IX RAC, MC and SRC Meetings

Research Advisory Committee(RAC)

The composition of Research Advisory Committee of the Centre w.e.f. February 2001 is as follows:

Dr. S. S. Johl
Chairman
21, Gurudev Nagar
Ludhiana (Punjab)

Dr. G. S. Bhalla
Centre for Studies in Regional Development,
Jawaharlal Nehru University
New Delhi

Dr. Ashok Gulati
Professor
Institute of Economic Growth
Delhi University
Delhi

Dr. J.C. Kanwar
Rtd. Jt. Addl. Registrar
Cooperative Societies
Department of Cooperation
Government of Punjab
Chandigarh

Dr. P. K. Joshi
(Member Secretary)
Principal Scientist
National Centre for Agricultural Economics and Policy Research,
Library Avenue, New Delhi

Dr. Mruthyunjaya
Director
National Centre for Agricultural Economics and Policy Research,
Library Avenue, New Delhi

Dr. S.S.Acharya
Director
Institute of Development Stuides
8-B, Jhalana Institutional Area
Jaipur, Rajasthan

Dr. S.S. Bisaliah
Vice Chancellor
University of Agricultural Science, Hebbal
Bangalore

Dr. J.P. Mishra
ADG (ESM), ICAR
Krishi Bhawan
New Delhi

The major observations of the RAC meeting held on January 10, 2001 are as follows:

NCAP should take firm initiatives to strengthen policy research through training programs and Strengthem collaborative research with SAUs and other ICAR institutes. The Centre should take up studies on emerging research issues in agriculture sector particularly in the context of WTO regime. Few important research areas are: micro financing through self-help groups, linkages between crop and livestock enterprises under different socio-economic and agroecological environments, assessment of crop insurance in the absence of minimum support price policy under the WTO regime, surplus management in the food sector and alternative institutions for limited government procurement and review of methodology on crop cutting experiments for assessing cost estimates of important crops. A review on agricultural education policy at the national level was suggested in the context of declining demand of agricultural graduates. Recommendations of QRT were appreciated and endorsed with some suggestions.

Management Committee (MC)

The current composition of the Management Committee of the Centre is given below:

Dr. Mruthyunjaya
(Chairman)
Director
National Centre for Agricultural
Economics and Policy Research
Library Avenue, New Delhi

Dr. R.C. Gautam
Head
Division of Agronomy
Indian Agricultural Research
Institute
Pusa, New Delhi

Dr. J.P. Mishra
Assistant Director-General
(Economics, Statistics and
Marketing), ICAR
Krishi Bhawan, New Delhi

Dr. Harish Gupta
Scientist (Senior Scale)
Indian Council of Agricultural
Research, Krishi Bhawan
New Delhi

Dr. Ramesh Chand
Principal Scientist
National Centre for Agricultural
Economics and Policy Research
Library Avenue, New Delhi

The Director
Directorate of Economics and
Statistics
Delhi State
Room No. 148, Old Secretariat,
Delhi – 110 054

Dr. P.K. Joshi
Principal Scieulist
National Centre for Agricultural
Economics and Policy Research
Library Avenue, New Delhi

Dr. Karam Singh
Professor
Deptt of Economics and Sociology
Punjab Agricultural University
Ludhiana, Punjab

Director of Horticulture,
Govt. of Haryana, 30, Bays Bldg.,
Sec 17, Chandigarh

Mr. Narender Kumar
(Member Secretary)
Assistant Administrative Officer
National Centre for Agricultural
Economics and Policy Research
Library Avenue, New Delhi.

The Finance & Accounts Officer
Indian Agricultural Statistics
Research Institute
New Delhi

Major observations of Management Committee meeting held on October 6, 2000 are as follows:

The Committee expressed satisfaction about the progress under NATP, AP Cess Fund and collaborative projects. Progress on development of website on networking of social scientists and NCAP documentary was appreciated. The Committee expressed satisfaction on the action taken report. It was suggested that from the next meeting, the action taken report should be submitted in a tabular form i.e. action taken against each agenda item/decision taken. The proposal to purchase equipment other than approved in the Ninth Plan within the approved limit of Rs. 75.9 lakhs were discussed by the Committee and suggested that a detailed proposal giving full justification may be sent to Council for approval.

Staff Research Council (SRC)

Twelve meetings of the SRC were held during the period. Progress of the on-going research programs was reviewed. Some new research proposals were reviewed and approved. Recommendations of the QRT report were discussed at length. SRC meetings are now being held in two sessions. In the first session, seminar and research results are presented where all scientists, and staff associated with research are invited. The second session is devoted

to discuss policy issues and other research administration related activities where only scientists participate. In order to improve the reading and presentation skills all scientists are to deliver one seminar in respective areas of interest in the SRC. This is besides the ongoing research work presentation by the scientists and has been made compulsory. Guidelines and layouts for NCAP publications were also finalised in the SRC meetings.

Other Committees

A number of internal committees have been constituted for decentralised management. Such committees and their terms of reference are as follows:

Academic Planning and Policy Committee

- To strengthen internal planning and policy direction functions.

Scientist Evaluation and Development Committee

- To encourage critical participation and strengthen socially acceptable incentives and deterrent mechanism.

Budget Committee

- To plan, review and monitor expenditure and income including those for sponsored projects.
- To ensure compliance of proper procedures.

Purchase Committee

- To purchase material and services according to the prescribed official procedures and in accordance with the Budget Committee guidelines /directions on utilisation of funds.

Publication Committee

- To plan, format and make recommendations regarding Centre's publications.
- To prepare guidelines for and arrange internal and external reviews and coordinate revisions.

- To help and advise younger faculty members on publication related matters.
- To identify printers and suggest pricing, circulation norms, etc.

Consultancy Processing Cell

- To examine the proposal related to consultancy with reference to guidelines of the Council issued from time to time and recommend appropriate action.

Women Cell

- To recommend measures for the welfare of the women employees.
- To make recommendations for expeditious relief and redressal of grievances including those related to sexual harassment.

Grievance Cell

- To examine the grievances received and suggest follow-up action accordingly.

Official Language Committee

- To monitor the progress of work done in official language from time to time and suggest relevant measures for improvement.
- To organize Raj Bhasha Week/Day as intimated by the Council from time to time.
- To report to the Council and other agencies on progress from time to time.

PME/NATP Cell

- To plan, promote and monitor PME activities of the NATP.
- To report the progress to the NATP authorities from time to time.

NATP Site Committee

- To guide and monitor the progress of NATP projects in the Centre.
- To report to the NATP authorities / Council about the progress from time to time.

Institute Joint Staff Council

Dr. Mruthyunjaya	Chairman
Dr. S. Selvarajan	Member
Sh. Narender Kumar	Member
Sh. Naresh Kumar	Member
Sh. Khyali Ram Chaudhary	Member
Sh. Mahesh Kumar	Member
Sh. M.S. Vashisht	Member Secretary

Quinquennial Review Team

The Centre, established in 1991, is completing a decade of its existence. The first quinquennial review of the Centre covering the period 1991-99 was conducted during March to October, 2000 under the chairmanship of Prof. V.S. Vyas. This external review was conducted through a participatory and interactive mode involving multiple stakeholders like Centre's scientists and staff, ICAR research managers, state agricultural universities, state government

NCAP QRT team with Dr. R.S.Paroda, DG, ICAR

departments and private sector industries. The Quinquennial Review Team, in its report, has commended that the Centre has made a mark in the identified theme areas of research covering technology policy, sustainable agricultural system, markets and trade, institutional change and agricultural growth and adjustment. The review emphasizes the need for a policy research based Centre like NCAP to be forward looking and proactive to face emerging issues and anticipate future challenges in agriculture.

Recommendations

While lauding the Centre for the strong foundations laid for future growth, QRT has made following key recommendations to strengthen the Centre and make it responsive to the dynamic situations and needs for conducting high level policy research and policy dialogue in the coming years.

On Centre's mandate and approach

- Focus on problems of more fragile and more disadvantageous agro-ecological systems
- Balanced approach towards all the three mandated areas namely policy research, policy advocacy and capacity building
- Strategies for revitalizing the P.G. programme in agricultural economics in NARS
- Separate theme area on agricultural modelling focussing on Indian agriculture to facilitate understanding of policy implications

Theme area-wise suggestions

Technology policy: Technology forecasting, methodology improvement for priority setting at different levels as well as for NRM research, quantification of spill-over effects of technology, internalising society's preferences in technology generation, emerging areas like IPRs, biotechnology, private sector participation in agricultural research are the emerging and challenging areas.

Sustainable agricultural systems: Modelling the trade-offs between agro-ecological goals at regional level and the attainable socio-economic options at farm household level, mapping of sustainability status of natural resources, development of sustainability indicators, institutional alternatives, policy, technology and sustainability modeling, conflicts, interactions and scenario

analysis in NRM, trade-off analysis for alternative development pathways, trade liberalisation and sustainability implications. Methodology for quantifying the externalities and internalizing them into the policy analysis is one of the critical areas in which the Centre should play a leading role.

Markets and trade: WTO, international trade and IPR related issues, and modeling development to analyze the impact of changes in agricultural procurement, price support, policies on subsidy, and public investments are the topics on which the Centre may concentrate in the near future.

Institutional change: Supply of supporting services, including extension, markets, trade and community organisations, evaluation of alternative sources for technology development and diffusion, and pro-active research to evaluate and guide the appropriate institutional mix in agriculture sector matching with the specific needs, need attention on priority basis.

Agricultural growth and modeling: Analysis of agricultural growth patterns, changes in rural society including occupational structure, determinants of agricultural growth and potential of high-value and low-input agriculture, and modeling of regionally differentiated growth strategies to evaluate alternative pathways and their impacts on resource base while meeting the multiple but conflicting goals of the society as well as farm households, commend themselves as topics deserving attention on priority basis.

Policy advocacy and capacity strengthening

- Compendium of agricultural policies during the year and a seminar on agricultural outlook as an annual feature for promoting policy dialogue and dissemination among the multiple stakeholders

- Workshop modules for providing hands on training in the areas of priority setting, technology assessment, natural resource policy, environmental impacts and policy modeling.

- Curriculum development in social sciences for agriculture and HRD for faculty in new areas like natural resources and environmental economics, agricultural trade, sustainable development, agri-business and modelling.

On Management

- Broad based Research Advisory Committee to meet twice in a year to plan and review the progress of Centre's research activities.

- Broad based Management Committee to focus only on non-academic aspects of management like physical infrastructure facilities, financial aspects like budgets, allocation and utilization of funds, planning aspects like annual and perspective plans, and staff welfare related aspects like grievance mechanisms etc.

- NCAP initiated academic administration committees to be reconstituted as Academic Planning and Policy Committee, Scientist Evaluation and Development Committee, Budget Committee, Purchase Committee and Publications Committee for further decentralization and empowerment of the scientists for academic excellence.

- Project based budgeting to be initiated immediately covering every project irrespective of its source of funding

On Infrastructure and HRD

- Gradual increasing of scientists' strength to reach 25-core faculty, by properly balancing across need based expertise in different theme areas. This should be matched with the strengthening of administration, technical and supportive staff support for efficient services. Library of the Centre to be strengthened with modern facilities, electronic data accessibility and independent Internet connectivity.

- Shared accommodation for the staff of the Centre with sister institutions immediately while speeding up the construction of staff quarters is strongly emphasized since this is considered as a critical constraint. Few transit houses to be hired by the Centre for supporting Visiting Scientists programme and to provide the housing facility to the Visiting Scientists and scholars.

- Intensive national and international training programs for providing HRD to the faculty for achieving academic excellence in policy research.

X Participation in Conferences, Meetings, Seminars and Workshops

Name	Theme and Duration	Place
Anjani Kumar	Workshop on 'Impact of agricultural research' (February 10-11, 2000)	ICRISAT, Patancheru
	'WTO agreement on agriculture: India's negotiating agenda' (June 10, 2000)	IIFT, New Delhi
	Workshop on 'Agricultural research prioritization' (June 21-22, 2000)	UAS, Bangalore
	Seminar on 'Issues and strategies for WTO negotiations on agreement on agriculture' (August 4, 2000)	Federation House, New Delhi
	8th annual conference of Agricultural Economics Research Association (December 28-29, 2000)	TNVASU, Chennai
	60th annual conference of Indian Society of Agricultural Economics (January 22-24, 2001)	University of Kalyani, Kalyani
	ICAR-ICRISAT collaborative workshop on 'Documentation, adoption, and impact of technologies in livestock sector in India' (January 18-19, 2001)	ICRISAT, Patancheru
B.C. Barah	National seminar on 'Reforms for resurgent republic' (December 6-8, 2000)	Indian Institute of Management, Bangalore
	Workshop on 'Socio-economic dynamics of rice production systems in eastern India' (May 16-18, 2000)	Calcutta

Name	Theme and Duration	Place
B.C. Roy	Review meeting of NATP project 'Analysis of productivity changes and future sources of growth for sustainable rice-wheat system' (April 24-25, 2000)	BCKV, Kalyani
	Workshop on 'Agricultural research prioritization' (June 21-22, 2000)	UAS, Bangalore
	Review meeting of NATP project 'Analysis of productivity changes and future sources of growth for sustainable rice-wheat system' (November 29-30, 2000)	CSAUA&T, Kanpur
Harbir Singh	International seminar on 'Protecting India's intellectual wealth in the new millennium' (December 2-4, 2000)	IIC, New Delhi
	60th annual conference of Indian Society of Agricultural Economics (January 22-24, 2001)	University of Kalyani, Kalyani
M.B. Dastagiri	WTO agreement on agriculture: India's negotiating agenda (June 10, 2000)	IIFT, New Delhi
Mruthyunjaya	Review meeting on TOE NRE economies (April 3, 2000)	UAS, Bangalore
	Commercialization of agricultural technologies (May 30-31, 2000)	IIMA, New Delhi
	Workshop on 'Agricultural research prioritization' (June 21-22, 2000)	UAS, Bangalore

Name	Theme and Duration	Place
Mruthyunjaya	Launching workshop on mission mode project on 'Socio-economic aspects of dairying in India' (August 21-22, 2000)	NDRI, Karnal
	Meeting of the Estimate Committee of Parliament (September 2-5, 2000)	Panchamari, M.P.
	Workshop on 'Prioritization of agricultural research' (September 29-30, 2000)	Surajkund, Haryana
	8th annual conference of the Agricultural Economics Research Association (India) (December 28-29, 2000)	TNVASU, Chennai
P. K. Joshi	Seminar on 'Agricultural insurance' (August 28-31, 2000)	New Delhi
	Workshop on 'Planning and implementation of on-farm chickpea IPM in Nepal (September 6-7, 2000)	Patan, Nepal
	International workshop on 'Developing an action program for farm level impact in rice-wheat system of the Indo-Gangetic Plains (September 25-27, 2000)	New Delhi
	Workshop on 'Prioritization of agricultural research' (September 29-30, 2000)	Surajkund, Haryana
	8th annual conference of the Agricultural Economics Research Association (India) (December 28-29, 2000)	TNVASU, Chennai

Name	Theme and Duration	Place
P. K. Joshi	ICAR-ICRISAT workshop 'Documentation, adoption and impacts of livestock technologies' (January 18-19, 2001)	ICRISAT, Patancheru Hyderabad
	60th Annual Conference of the Indian Society of Agricultural Economics (January 22-24, 2001)	INSPARC, University of Kalyani
P. S. Birthal	8th annual conference of the Agricultural Economics Research Association (December 27-28, 2000)	TNVASU, Chennai
	ICAR-ICRISAT workshop 'Documentation, adoption and impacts of livestock technologies' (January 18-19, 2001)	ICRISAT, Patancheru
	60th annual conference of the Indian Society of Agricultural Economics	University of Kalyani, Kalyani
Sant Kumar	Sensitization-cum-training workshop on research priority assessment (June 21-22, 2000)	UAS, Bangalore
	8th annual conference of Agricultural Economics Research Association (India) (December 28-29, 2000)	TNVASU, Chennai
	International workshop on 'Developing an action programme for farm-level impact in rice-wheat system of the Indo-Gangetic plains' (September 25-27, 2000)	NBPGR, New Delhi

Name	Theme and Duration	Place
S. Selvarajan	Meeting of the UNDP-DST's programme on 'Information technology for agriculture in Punjab' (December 25, 2000)	Department of Science & Technology, New Delhi
	First Quinquennial Review Meeting of Water Technology Centre for Eastern Region (August 28-September 1, 2000)	WTCER, Bhubaneswar
	Second Quinquennial Review Meeting of Water Technology Centre for Eastern Region (December 8-14, 2000)	WTCER, Bhubaneswar

Policy Interaction

The Centre's staff has been involved in a number of activities including informal discussions with academicians and policy makers and analysts. A series of group discussions, brainstorming sessions were organised on important topics involving peers and policy makers. These covered areas like research, policy, economic liberalisation, trade, etc.

Dr. Mruthyunjaya was a Member, Research Advisory Committee (RAC) of Institute of Applied Manpower Research (IAMR), New Delhi. He also served as a Member, Planning Board, Tamil Nadu Veterinary and Animal Science University, Chennai; Member, Advisory Board, Institute of Agri-Business Management, Rajasthan Agricultural University, Bikaner (Rajasthan).

Dr. Ramesh Chand was a member of core group of Expert Committee on WTO, and Punjab and Haryana agriculture.

Dr. S. Selvarajan, served as a member of the Review Missions dealing with irrigation investment prioritization, O & M funding, water rates and cost recovery related policy issues under water resources consolidation projects of Orissa, Haryana and Andhra Pradesh. He also served as a Member of the ICAR subject matter committee for restructuring P.G. Curricula in Social Sciences; and Member-Secretary, Quinquennial Review Team for Water Technology Centre for Eastern Region, Bhubaneswar.

XI Workshops/Seminars

Workshops, seminars, brainstorming sessions were organised periodically on policy related issues of current importance. These were organised either individually by this Centre or in collaboration with national and international institutions. These events are given below.

- A one day seminar on 'Effects of Trade Liberalisation on Indian Agriculture' sponsored by CGPRT Centre, ESCAP, U.N. Bogor Indonesia, was organised at NCAP, New Delhi on February 10, 2000.
- A one-day workshop on 'Equity Driven Trade and Marketing Policy Strategies for Improved Performance of Indian Agriculture – A Scoping Exercise' was organized jointly with University of Wollongong, Australia and Institute of Development Studies, Jaipur at ICCSR, New Delhi on December 15, 2000.
- Workshop on 'Institutionalization of Priority Assessment in SAUs' was jointly organised with University of Agricultural Sciences, Bangalore on June 21-22, 2000.
- Workshop on 'Networking of Social Scientists in ICAR-SAU System' was organised at NCAP, New Delhi on August 17-18, 2000.
- A two day workshop on 'Women in Agriculture', was organised at NCAP in collaboration with Indian Society of Agricultural Economics and Delhi School of Economics on November 9-10, 2000.
- Workshop on 'Networking of Social Scientists in ICAR-SAU System' was organised at TNVASU, Chennai on December 27, 2000.
- ICAR-ICRISAT collaborative workshop on 'Documentation, Adoption and Impacts of Livestock Technologies' was organised jointly with ICRISAT, Patancheru on January 18-19, 2001.
- A two-day workshop on 'Prioritization of the Strategies for Agricultural Development in the North-East India: Implications for Technology and Policy Interactions' was organised jointly with Assam Agricultural University at Jorhat on February 27-28,2001.

The salient recommendations emerging from some of these are presented below:

Equity Driven Trade and Marketing Policy Strategies for Improved Performance of Indian Agriculture– A Scoping Exercise

- Before linking the domestic markets with the world market, it would be important to first improve the functioning of the domestic market and to undertake strengthening of farm, non-farm linkages so that growers are able to realize better prices without adversely affecting the interests of economically weaker sections who are least able to bear the burden of reforms.

- The food management system including buffer stocking built up over the years needs to be retained as an important instrument of food security policy. However, the management system should be decentralised to improve efficiency.

- The subsidies enjoyed by the non-poor in the non-farm sector and urban areas need to be phased out to release more resources for the agricultural sector and social development.

Participants in the workshop 'Equity driven trade and marketing policy strategies

- The policy of minimum support prices for important agricultural commodities needs to be continued in the foreseeable future and its effective implementation be ensured in all the areas of the country.

- To some extent adverse impact of liberalisation on weaker sections and poorer regions can be mitigated through timely action on tariffs and through public distribution system of food.

- A consistent policy of export to establish itself as a reliable supplier in the world market.

- Encourage exports of processed and high value commodities like fruits and vegetable products and spices in which the country has a comparative advantage.

- With a view to deriving gains from exports and minimize losses due to imports, the country should establish a system of monitoring the prices and trade channels in the world market.

- Apart from the unilateral actions, India should strategically try to play an active role in the on-going negotiations in the framework of World Trade Organization (WTO). The critical areas affecting India and several other developing countries include seeking adequate market access for agricultural commodities by asking (a) fulfilling the commitments made by developed countries for reducing high level of domestic support to agriculture; (b) reduction in high level of tariffs and tariff rate quotas; and (c) removal of distortions like discriminatory sanitary and phytosanitary standards and other technical barriers.

Documentation, Adoption and Impact of Livestock Technologies

An ICAR-ICRISAT collaborative workshop was organised at ICRISAT, Patancheru on January 18-19, 2001 to document inventory of livestock technologies and to track some important technologies for their adoption and impacts. The following recommendations emerged from the deliberations of this workshop.

- Review crossbreeding research and development programs considering genetic and environmental interactions.
- Break yield barriers in case of small ruminants through basic genetic research.
- Improve dissemination of existing nutrition technologies to address feed and fodder scarcity.
- Crop breeding should consider improving straw quality.
- Emphasize more on preventive disease control rather than on curative

XII Distinguished Visitors

Mr. Alan Marter, Natural Resources Institute, United Kingdom.
Dr. Ashok Seth, World Bank, Washington. D.C.
Dr. A. Vaidyanathan, Professor Emeritus, MIDS,Chennai.
Dr. Amerika Singh, Director, NCIPM, New Delhi.
Dr. B. N. Mathur, Director, NDRI, Karnal.
Dr. C. Ramasamy, Director, CARDS, TNAU, Coimbatore.
Dr. D.P. Chaudhari, University of Wollongong, Wollongong, NSW Australia.
Dr. D. K. Marothia, Indira Gandhi Krishi Viswavidyalaya, Raipur.
Dr. G.L. Kaul, Vice Chancellor, AAU, Jorhat,
Dr. G. S. Bhalla, Retired Professor, JNU, New Delhi.
Dr. H.N. Verma, Director, WTCER, Bhubaneswar.
Dr. I.P. Abrol, Ex DDG (NRM), ICAR, New Delhi.0
Dr. J.P. Mishra, ADG (ESM), ICAR, Krishi Bhawan, New delhi.
Dr. James G. Ryan, World Bank Review Mission on NATP.
Dr. John Farrington, Overseas Development Institute, London.
Dr. J.C. Katyal, Director, NAARM, Hyderabad.
Dr. Kiran Singh, DDG (Animal Sciences), ICAR, New Delhi.
Mr. Mari Nakamura, Institute of Developing Economies, Japan.
Dr. M. Velayuthem, Director, NBSS& LUP, Nagpur.
Dr. M.S. Bhatia, former Member, CACP, New Delhi.
Dr. M.V. Rao, Former Special Secretary, DARE, New Delhi.
Dr. N.K. Tyagi, Director, CSSRI, Karnal.
Dr. P.M. Singhi, Professor, Indian Institute of Management, Ahmedabad.
Mr. Robert J. Clement , Director, ACIAR, Australia.
Dr. R. S. Paroda, DG, ICAR and Secretary, DARE, New Delhi.
Dr. S. Edison, Director, CTCRI, Thiruvananthapuram.
Dr. S. Nagarajan, Project Director, DWR, Karnal.
Dr. S.N. Mishra, Society for Economics and Social Research, New Delhi.
Dr. S.S. Acharya, Director, Institute for Development Studies, Jaipur.
Dr. S. S. Johl, Ex-Vice Chancellor, PAU, Ludhiana.
Dr. S. Ayyappan, Director, CIFE, Mumbai.
Dr. S.K. Goyal, Director, Institute of Studies in Industrial Development, Delhi.
Dr. V.S. Vyas, Professor Emeritus, Institute for Development Studies, Jaipur.

XIII Personnel

Posts

The details of the positions sanctioned, filled and remaining vacant at NCAP are given below:

Positions sanctioned, filled and vacant

S.No	Post (Category wise)	Position sanctioned	Position filled	Position Vacant
1	Director	1	1	—
2	Principal Scientist	4	4	—
3	Senior Scientist	6	3	3
4	Scientist	10	10	—
5	Assistant Administrative Officer	1	1	—
6	Assistant Finance and Accounts Officer	1	1	—
7	Assistant	1	1	—
8	U.D.C	1	1	—
9	L.D.C.	1	1	—
10	Stenographer	1	1	—
11	Junior Stenographer	2	2	—
12	Technical Assistant	4	4	—
13	Driver	1	1	—
14	S.S. Grade	2	2	—
	Total	36	33	3

List of Staff

Scientific

Mruthyunjaya	Director
D. Jha	National Professor (w.e.f. 06.07.2000)
P.K. Joshi	Principal Scientist
T. Haque	National Fellow (upto 30.11.2000)
S. Selvarajan	Principal Scientist
Ramesh Chand	Principal Scientist
B.C. Barah	Principal Scientist
G. Singh	Senior Scientist
Suresh Pal	Senior Scientist
P.S. Birthal	Senior Scientist
Amit Kar	Senior Scientist (upto 10.08.2000)
Rasheed Sulaiman, V.	Scientist
P.A. Lakshmi Prasanna	Scientist
P. Adhiguru	Scientist
Rajni Jain	Scientist
B.C. Roy	Scientist
Anjani Kumar	Scientist
A. Ravishankar	Scientist
Sant Kumar	Scientist
Harbir Singh	Scientist
M.B. Dastigiri	Scientist

Administrative

Narender Kumar	Assistant Administrative Officer
Naresh Arora	Assistant Finance & Accounts Officer
M.S. Vasisht	Assistant
Ravindra Kumar	Junior Clerk (upto 13.07.2000)
Umeeta Ahuja	Steno
Seema Khatter	Junior Steno
S.K.Yadav	Upper Divison Clerk
Inderjeet Sachdeva	Lower Division Clerk

Technical

Khyali Ram Chaudhary	T-4
Mangal Singh Chauhan	T-4
Sonia Chauhan	T-4
Arun Kumar	T-II-3
Satender Kataria	T-1

Supporting

Mahesh Kumar	S.S. Gr I
Sanjay Kumar	S.S. Gr I

XIV Budget

Expenditure pattern during the year 2000-2001 is shown in Table

Expenditure during 2000-2001 (in lakh Rs.)

Head of Account	Plan	Non-Plan	Total
Pay and allowances	15.50	48.00	63.50
OTA	0.00	0.15	0.15
Travelling expenses	3.50	1.50	5.00
Works	3.50	2.00	5.50
Other charges including equipments	42.00	5.70	47.70
HRD	1.60	0.00	1.60
Total	66.10	57.35	123.45
NATP			29.00
Other projects			29.00
Resource generation			1.25
Grand total			182.70

XV Infrastructure Development

The budget for strengthening physical infrastructure has been approved in the Ninth Five-Year Plan. A piece of land measuring 4338 sqm has been transferred to NCAP in the IASRI campus. An amount of Rs. 400 lakhs was initially proposed for the office building. This was agreed in principle, out of which Rs. 300 lakhs has been approved in the Ninth Five-Year Plan allocation. The construction work has been handed over to CPWD. Building plan has been finalised and necessary approvals from civic authorities are being expedited. The construction is likely to start soon.

It is proposed to construct 20 staff quarters for NCAP in association with NBSSLUP. An amount of Rs. 100 lakhs was initially proposed, which was agreed in principle, of which 70 lakhs has been allocated in the Ninth Five-Year Plan. The initial processing is in progress.

Library of the Centre is being developed considering complementarities with other ICAR institutes located in Delhi. The emphasis is on development of information services and information sharing. The proposed renovation of library includes provision for on-line connectivity with national and international libraries for sharing information.

Independent desktop computing facility is now available to the entire scientific staff. For effective communication, efficient administration and quick co-ordination, LAN connectivity is provided by linking Indian Agricultural Statistics Research Institute, to all the scientists of the Centre. LAN nodes are strengthened with more speed and storage to improve the access to the LAN. Scientists have been provided with their personal E-mail accounts at desktop.

New Initiatives on social science networking, and social science information repository programs have been taken to fulfil the Centre's HRD mandate of strengthening social science linkages and capacity enhancement within the National Agricultural System. The Centre has launched a website in order to strengthen agricultural economics research in a network mode.

Innovative and need-based human resource development programs for scientists, technical and administrative staff alongwith information support systems have also been designed.