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Subject II

**Agricultural Research and Extension in India:
Achievements and Failures and Directions for the Future**

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Research and development has always been the support to agricultural systems across the globe. In India agricultural research and extension played a major role in bringing about the Green Revolution. Public investment in agriculture gave a fillip to the farming community in adopting various production technologies and investing in farming, which paid rich dividends in the form of increased agricultural growth rate which for the first time went above population growth. Research and extension, however, is not a one time phenomenon but needs to be a regular process, commensurate with changing demands in the light of evolving global context of agriculture. Though research endeavour has been in tune with the contemporary problems, however, our extension system faces important challenges in the areas of relevance, accountability and sustainability. Privatisation and global negotiations requires an effective response in the form of agricultural innovations specific to diverse production environment, so that chronic problems could be addressed. It is expected that future agricultural growth would largely accrue from improvements in productivity of diversified farming systems through sustainable management of natural resources, especially land and water. Improvement in productivity level assumes additional importance in view of poor scope of bringing additional area under plough. One of the possibilities is to use critical inputs on scientific lines coupled with expansion of irrigation capacities. Application of agro chemicals especially pesticides have to be in line with sanitary and phyto-sanitary (SPS) measures of WTO to prevent negative implications on ecology and environment. Moreover, the post-harvest technologies and their integration with the production and marketing through effective value chain is imperative. Execution of all farm and off-farm activities as a complex venture necessitates the streamlining of extension system. Effective linkages of production systems with supply chain would play an increasingly important role in the diversification of agriculture. There is need for reappraisal of the capacity of existing agricultural extension system to cater to future needs of the farming community. It is becoming increasingly evident that public extension by itself may no longer respond to the multifarious demands of farming

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systems. Partnership with corporate/ private players could be examined, so as to fetch the desired results.

The deliberations and presentations on the theme were expected to analyse the issues related to research and development system in India. The sub themes of the theme were structured to deliberate on the key issues related to the performance assessment of agricultural research and extension in India to arrive at researchable issues for sustainable development of agricultural system in India.

The papers presented on priority setting exercise took into account the development goals, equity, sustainability, and the research capacities. The study emphasised on the re-allocation of the resources to the states and commodities on the basis of diverse needs. The highest allocation of research resources was recommended for north eastern states/hill and mountain states. The study was suggestive of prioritising livestock sector followed by cereals, horticulture crops, oilseeds, fisheries and pulses.

The study on land shaping models for enhancing agricultural productivity in salt affected coastal areas of West Bengal showed concern towards reclamation of coastal saline areas which have become priority issue in many other states as well. The study brought out that in coastal areas land shaping techniques particularly farm-pond and paddy-cum-fish models, are unique for addressing the challenges of livelihood by arresting land degradation, drainage congestion and scarcity of fresh water for irrigation. It was suggested that the policy level constraints should be addressed, and community based rainwater harvesting and common pool wastelands be encouraged for enhancing agricultural productivity.

Apart from the presentations there was in house discussion on the various facets of agricultural research and extension in India. The participants of this technical session were of the opinion that not much has been covered related to the theme in this session, as such suggestions from the participants were invited and areas identified by the participants were categorised into the three following sub-themes which were later flagged for in-depth discussion.

RESEARCH

- Identification of location-specific research and extension linkages.
- Investment in agriculture in relation with marginal impact on agricultural productivity and rural development.
- Assessment of research and extension deficits in different agricultural enterprises.
- Models for involvement of different stakeholders, including policy makers, agribusiness industry and farmers in innovation process and extension system.

Extension:

- Integrated approach towards development and diffusion of innovations.
- Analysis of determining the degree of adoption at micro level.
- Institutional reforms for effective extension services delivery system in rural areas.
- Assessment of information needs across different farming systems and application of ICT tools.

Education:

- Issues of coexistence of inadequate access to extension services and replacement of ineffective extension tools.
- Strengthening of collaborations among SAUs, ICAR institutes, conventional universities, private R and D institutes and informal sectors.
- Identification of gaps in respect of policies, investments, capability, research, outreach, awareness and adoption.

RECOMMENDATIONS

All the above areas were discussed and the house decided to make following recommendations:

- It was recommended that research resource allocation must take into account the climatic and biophysical factors. Allocation of the resources should be more for evolution of demand-driven technologies in order to avoid market sensitivities to have a better pay-off for all the produce that could encourage farmers to adopt them in their areas of operation. It was recommended that more resources must be made available to meet the current challenges and investment in agricultural research should be enhanced to at least 1 per cent of the agricultural gross domestic product (AGDP).
- Consistent with the diverse agro-climatic setting, supporting and shocking factors, there is a need to identify most relevant research areas. In most of the cases research themes have to be location-specific and demand-driven.

- Today, market information on product prices and response would create demand, therefore, information technologies have a greater role in dissemination of market information. These information could help to address quality issues for product development and help the farmers to fetch remunerative prices.
- The corporate sector needs to be kept informed about the proper/efficient technologies that could be environment friendly and needs to be taken on board in order to pave way for sustainability of the system.
- KVKs should be financially strengthened to disseminate the right technologies at the right time. They should be encouraged to involve the NGOs in on farm rural activities and also to use ICTs for upgrading the knowledge of the farmers.
- The curriculum at UG level should be upgraded and made relevant as per the present day needs. Agribusiness management courses should be included as the major courses to impart business management skills to the agricultural graduates.
- There is a need of reforming the existing extension system in Indian agriculture. The extension services should be streamlined to bridge the gap between technology evolution and their diffusion among stakeholders. Unorganised marketing arrangements demand the need of market-led extension.
- There is a need to prepare crop calendar in all the regions in order to address enterprise specific issues. It would therefore be imperative to budget water requirements in all agro-climatic regions of the country. Expansion of irrigation capacities therefore needs to be prioritised to meet this objective.
- A need is felt to make all the stakeholders aware about the issues relating to contemporary agriculture and capacity building programmes (CBP) have an important role. Therefore, separate CBP for different stakeholders would widen their vision for sustainable development.