

2nd March, 2009

Dear Mr. Prime Minister,

The National Knowledge Commission is seriously concerned about deep crisis in Indian agriculture which has been in the making for some time. There are several dimensions of this problem. The proportion of the population employed in agriculture is as much as 52 per cent, yet agriculture contributes just 18.5 per cent to the national GDP. Thus per capita GDP and average living standards in agriculture are significantly lower than in the non-agriculture sector. Growth in terms of yield per hectare and employment creation has also slowed down in the sector and per capita availability of food grains has shown no discernible increase for more than three decades. The recent suicides of farmers are symptoms of a much deeper malaise. Thus, in order to transform India into a knowledge economy, it is imperative that we focus on agriculture on a priority basis. In this regard NKC believes that appropriate application of knowledge in agriculture can play a major role in boosting the agrarian economy and giving the Indian farmer a competitive edge in the global market.

We note that various Commissions and Working Groups set up by the Government of India at different times have made a number of important and extremely useful recommendations. Yet it is a matter of concern that most of these recommendations have not been implemented. We urge you to consider these recommendations for speedy implementation. In addition, we would like to make some further recommendations, based on discussions with a variety of stakeholders and the Report of a Working Group representing agricultural scientists, managers of extension services, independent analysts and representatives of farmers' organisations and of companies linked with commercial farming. We recommend the following concrete steps for the revitalization of knowledge generation and application in agriculture:

A. Knowledge Generation

1. Modernise and stimulate agricultural research institutions, co-ordinate research and make research support more flexible.

- Each State Agricultural University (SAU) and Indian Council of Agricultural Research (ICAR) institute should create a research policy unit comprising core faculty and also including other issue-based stakeholders.
- Based on the research policy and programmes, expected research output and linkages to extension and other stakeholders, each SAU and ICAR institute must put forward a set of valuation indicators, to be used for periodic assessment and public scrutiny.
- Both the ICAR and SAU should assign about 50 per cent of their total research resources (largely Plan funds) to support a competitive grants system, with its deployment focused on priority multi-disciplinary and regional research areas.
- Priority problem oriented research in a competitive funding mode should be promoted, for example by identifying a group of scientists reputed for excellence in an area and encouraging them to form a coalition to work on specific problems in mission mode, with required funding support.

- Regional Coordination Units should be initiated under the umbrella of the SAUs, and should include representatives of ICAR, relevant line departments, Agricultural Technology Management Agency (ATMA), rural credit agencies, cooperatives, private sector, farmers' organizations and key civil society organizations falling within the particular region.
- Decentralisation of research management and authority and distribution of accountability at different levels in the ICAR and SAUs are required. Scientists and research teams should be empowered to function in this decentralised system, with administrative and financial support. This will require the amendment of the Model Act (1966) and University Acts binding all SAUs, and a change in the legal status of the ICAR to grant full administrative and financial autonomy with enhanced funding.
- There should be emphasis on ensuring research relevant to farmers' needs, by encouraging and institutionalising greater interaction between research and extension personnel and providing feedback mechanisms for farmers.

2. Improve the organisation of agricultural research.

- The Research Project File (RPF) system in ICAR institutes has fossilised and does not assist the conduct or management of relevant research. The lab/project file must be made mandatory in SAUs and ICAR institutes and computerised on a priority basis, preferably by 2009-2010. This will enable the creation of a research database within the organisation and at the national level.
- Based on this lab/project file system, there should be an annual scientific audit of each programme/project.

3. Direct more research to neglected areas.

- Much more research activity is required for enhancing productivity in rain-fed agriculture and the cultivation of traditional staples.
- Research into improvements in post-harvest technology and storage patterns should be promoted with special funds allocation.
- The possibilities and problems associated with 'jhum' cultivation must be addressed.
- Agriculture and rural livelihoods in the North Eastern region deserve very special attention, including with the establishment of a sub-cadre of agricultural graduates well trained to meet local R&D needs.
- While water management has been and remains a major area of agricultural research, there is need for more locally specific result-oriented research to develop techniques that can be easily applied by farmers.
- More research is also required to address the mitigation of, and adaptation to, climate change.

4. Provide more effective incentives for researchers.

- Agricultural research should be made attractive as a career option for young scientists through appropriate recruitment and personnel policies, incorporating a flexible system of incentives in career advancement and remuneration.

- The ICAR and SAUs should promote and recognize quality and relevant scientific output by promoting research publication, establishment and working of patents, technology development and transfer. These should be accompanied by strong disincentives for unethical and fraudulent professional practices.
- In order to promote team-based research, a system of equitable incentives for the leader and the members of the team should be devised.
- As in the ICAR, the SAUs should introduce sabbatical leave, giving scientists the freedom to choose any laboratory or relevant institution within or outside the country for advanced studies during the sabbatical period with full pay. In addition, lien may be given to those scientists who have developed a technology area (including a patent) with high public interest value, to work on such development in their own capacity, in case the technology is not being developed by other parties.

5. Change the curricula in agricultural universities to ensure greater relevance.

- Curricula should be changed with a bottom-up approach to prepare students for careers in agri-businesses and agri-clinics, and to give them new skills in entrepreneurship development, communication skills, computer knowledge, agribusiness, environment science and biotechnology. This requires both the introduction of new courses and major reforms in the examination system.
- With the increasing feminisation of agriculture, it is very important that agricultural curriculum should be engendered by introducing basic courses on Gender Concerns in Agricultural Development.
- The system should be able to provide periodic (and more frequent) refresher training for extension workers to upgrade their technical efficiency.
- Non-formal education programmes should be initiated in need-based vocational modules to generate para-professionals for technological and economic empowerment of the rural youth.

6. Exploit the opportunities and meet the challenges of Intellectual Property Rights.

- Any licensing of IPR enabled technology by public research must be done without in any manner excluding its access by resource-poor farmers.
- As the holder of thousands of farmers' varieties of plants and animal genetic stocks, the ICAR must immediately enunciate the policy and guidelines on the access to these materials by the private sector and the IPR related regulations applicable on the genetic material being accessed by these parties.
- There should be total transparency on all transfer or exchange of genetic material, and clear regulation to prevent private appropriation of farmers' varieties and animal stocks by misusing IPRs within or outside country.
- The ICAR and SAUs must enunciated must lay down clear guidelines to ensure benefit sharing with farmers who have preserved genetic resources, with respect to themselves and also other commercial parties.

7. Encourage and regulate private agricultural research.

- While private sector presence is rapidly increasing in biotechnology, critical input services and related areas, the thrust of private activity is on market-driven knowledge and services. Public-private partnerships should be leveraged to benefit resource poor farmers, who tend to have less access and to ensure that private research meets social needs.
- In the case of biotechnology and its application to crop plants and animals, particularly those in the food and feed chain, research on bio-safety aspects and processes leading to the release of such plant varieties in the environment should assume the highest priority, with transparency and civil society participation.
- Systems need to be developed to monitor the results of private research so as to avoid the problems associated with conflict of interest.

B. Knowledge Applications

The current system of agricultural extension in the country is based on a linear transfer of technology model, which needs to be made more responsive to local situations and community needs. To improve the scope and efficiency of extension, the focus should shift to providing an integrated range of services, making grass root workers devote more time to location-specific problems and be more accountable to the community.

8. Make knowledge applications in agriculture community-driven and farmer-led.

- Both panchayats and community-based organisations should be treated as platforms for delivery of an integrated range of services from production to post-harvest storage to marketing.
- New methods of collaboration between scientists and farmers must be institutionalised in order to identify their needs, set priorities in work programmes, test and refine the technologies and evaluate the final results.

9. Redesign the existing support systems.

- Support systems should move from input-centric model to output-centric models. This requires redesigning the support systems and incentives in the existing centrally sponsored schemes like Rastriya Krishi Vikas Yojana (RKVY), National Rural Employment Guarantee Scheme (NREGS), National Horticulture Mission, National Food Security Mission, and National Watershed Programme.
- The scope of the NREGS should be expanded to support small and marginal farmers in the production of food crops like traditional staples such as millets, organic soil management, Natural Pest Management, System of Rice Intensification (SRI), etc.

10. Document and disseminate successful experiences and good practices.

- The current extension system is based on technologies generated in the formal research institutions. This completely ignores the successful technologies generated by farmers and civil society organisations, which are based on local knowledge and may be more locally adaptable and with stronger ecological principles.

- Therefore special initiatives are required to find and document the successful experiences of farmers in particular areas and encourage their dissemination by the formal institutions and support systems.

11. Improve the capacities and expertise of extension workers.

- Extension workers must be provided with the necessary resources and facilities to carry out their work effectively, including transport and communication facilities such as two-wheelers and mobile phones where necessary.
- The present extension staff must be retrained to be able to provide information and assistance not only for agriculture and animal husbandry, fisheries and horticulture, but also with respect to methods of storage, transport, market access, value addition, credit etc.
- The syllabi in agricultural colleges and agricultural polytechnics must be restructured to prepare a cadre of extension workers who can broaden extension delivery.
- Institutional arrangements need to be developed to ensure continuing education of those involved in agricultural extension, whether in public institutions or in private capacity.

12. Restructure Agricultural Technology Management Agency (ATMA) to make it more decentralised, participatory and locally responsive.

- The staff of the various line departments connected with agricultural development (agriculture, horticulture, animal husbandry, dairying, fisheries) should be placed under the control of ATMA at the district level, with technical support, monitoring and quality control provided by the respective departments at the State level.
- This calls for restructuring the line departments at various levels and the recruitment of a competent and experienced Project Director in each district, with the exclusive function of management of the ATMA.
- The district level agricultural sector management programmes and plans for ATMA need to be prepared with a bottom-up participatory approach emphasising convergence and based on consultations with all stakeholders at the village level, which can then be consolidated at block and district level.
- The Department of Marketing, Department of Credit, Agricultural Universities, KVKs, NGOs, etc. should be partners in the planning process and provide support to the ATMA, in addition to implementing collaborative activities and programmes. The District Collector as the chairperson of the governing board of ATMA can play an important role in ensuring the participation of these partners.
- The implementation of the district level plans should be through Result Oriented Management (ROM) rather than the target-oriented management approach which is followed at present in ATMA. This process requires that short term management training be provided to all categories of staff and stakeholders engaged in implementation issues.

13. Enhance and regulate the role of private players in agricultural extension delivery

- The already large involvement of private agencies in agricultural extension should be recognised and encouraged, and most importantly, integrated with the public provision through some institutionalised mechanisms.
- At the same time, problems of conflict of interest in private provision must be minimised by appropriate regulation, with broad guidelines and a clear code of conduct.
- The existing multi-agency and multi-media extension strategies need to be co-ordinated, with some integration and interaction on content between various extension providers such as farm schools, information kiosks, web-based providers, kisan call centres, agri-clinics, mass media, etc.
- Contract farming has the potential to benefit small farmers when practiced appropriately, by providing larger scales of operation and assured market and price for the produce. To ensure the positive effects while preventing exploitation of farmers, legislative benchmarking of minimal standards in the conduct and practices of such contracts should be defined by the Central government, leaving flexibility to states for enacting state-specific laws, which could be either *at par* or above the central benchmark.

14. Create a web-enabled Knowledge Bank on all aspects of agriculture.

- Such a knowledge bank should strive to include all traditional knowledge that is credible *prima facie* or validated, all modern knowledge generated by research over the years with location-specific features highlighted, and appropriate information on post harvest and value addition aspects.
- It must also include dynamic data on marketing and market price movements, seasonal agricultural advisories, regional meteorological information, etc.

We believe that these changes are both necessary and desirable in order to encourage the creation and dissemination of useful and relevant knowledge in agriculture.

With warm personal regards,



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Chairman
National Knowledge Commission

Copy to:

1. Dr. Montek Singh Ahluwalia, Deputy Chairman, Planning Commission
2. Sh. Sharad Pawar, Minister for Agriculture