

RATIONALIZATION OF NATIONAL AGRICULTURAL RESEARCH SYSTEM IN PAKISTAN

S. Nasir Hussain Shaif*

ABSTRACT

The National Agricultural Research System (NARS) consists of several national research centers, provincial research institutions, Centers of Excellence at the Universities. Research in these R & D organizations comprises (i) basic knowledge-drawn research to targeted basic research, (ii) applied research and (iii) development of products and processes. Due to lack of purposeful and coherent efforts and somewhat loose and weak S & T Management Practices, the Research System has gradually deteriorated and the overall research efforts have resulted in the inadequate utilization of vast resources of the country. Low progress in the increase of per-unit productivity presents a major challenge to intensify efforts towards attaining greater production-efficiency.

To grow and maintain national economic strength and International Competitiveness, we have to transform NARS into a knowledge-based enterprise. The R & D organizations and agencies involved in Agricultural Research should tightly focus on essential programs. Every department should have a clearly defined mission, considering national priorities. It is also proposed that "Compendiums of S & T Management Practices" must be prepared for each R & D organization, in order to restructure, revamp and reform the NARS.

INTRODUCTION

Rain-fed and hand-hoe agriculture heralded the dawn of civilization. About 12,000 years ago, Irrigated Agriculture along the riverbanks resulted in production of surplus food, which in turn facilitated permanent settlements, urban societies and food trade. Demand and supply engineered science and technology. Agriculture is a way of life, a tradition, which, for centuries, has shaped the thought, the outlook, the culture and the economic life of the people. Agriculture, therefore, is and will continue to be central to all strategies for planned socio-economic development of the country.

Mainly farmers made early advances in Agriculture, such as better seed, livestock and improved implements. Agricultural Science began in 1700s, and involved scientists who applied material sciences to Agriculture. According to Dr. Norman Borlaugh, a Noble Peace laureate, called the father of "green revolution", on the basis of projected food-demand the average yield of all cereals must be increased by 80% between 1991 and the year 2025. Since the last century, the broad field of biotechnology research is a successful instrument for the improvement of agricultural production (Persley, 1989; Ahmad, 1988; Swaminathan, 1982 and Joske Bunder, 1990).

In the global context, Agricultural Research has made commendable advances. Chris Somerville (2000) has stated that in 1950, we grew worldwide about six hundred million hectares of cereal, using about 5.5 percent of the earth's surface. If we were growing the same type of cereal today, we would be using about 1.4 billion hectares of land, or actually most of the arable land on earth, because of the demands of population-growth. Because of the improvements brought by appropriate use of Agricultural Technologies, we're *still* only using about six hundred million hectares of land worldwide. About 800 million hectares of land of the world have been saved by increasing per-unit productivity, through joint efforts of Agricultural Researchers and plant breeders.

A recent study conducted by the FAO and Government of Pakistan (2002) indicated that, over the years, a lack of coherence has permeated the system and the overall research efforts, resulting in inadequate utilization of vast resources. Agricultural Statistics of Pakistan show that, during the last 53 years from 1947 to 2001, the percentage of production of wheat and cotton was 567% and 941% respectively, while per-unit productivity for same major crops was 275% and 397 %. Plant breeders and farmers are major actors for increasing overall production; however the role of research in increasing per-unit productivity is pivotal. There could be a number of reasons for the low output of research in Pakistan. Three major constraints in NARS are absence of functional linkages

* Scientific Secretary, PCST, G-5/2, Constitution Avenue, Islamabad. Email: black_rose_005@hotmail.com

between research and extension, disproportion of educational and financial resources and lack of proper management-system for efficient utilization of Human Resources.

LACK OF LINKAGES

Five Universities, 40 Federal and 66 Provincial R & D Organizations, huge infrastructure in the form of Extension Departments in all four Provinces, are all developing their own empires and have no well defined functional linkages. Linkages between the Provincial Research & Extension wing do exist officially, but are not effective. Three Agricultural Universities and one Veterinary University and Apex Research body PARC have got no proper linkages for Research & Development.

There is sufficient capacity, in terms of buildings and experimental facilities. Quite often, wasteful duplications of resources are observed at several institutes/organizations working under different control. On the two sides of the road, research facilities have been established under same agency, essentially to undertake identical activities. Just one kilometer from these new research organizations, the comparatively older research organization is crippled due to non-availability of resources. Agricultural research is the concurrent responsibility of both the federal and provincial governments; agricultural education is controlled by the provinces; however it is receiving some technical and financial support from the newly established Higher Education Commission (HEC). HEC, however, has no direct linkages with the agriculture research. Research Institutes established by an agency in the Campus of Karachi University has got no linkages with the University. The most determined effort to link research and education was undertaken in the case of the USAID-supported project in North West Frontier Province of Pakistan, where Agriculture Research System was merged with Agricultural University (Kamal Sheikh, 2001). This failed to perform, due to mismanagement and exclusion of agriculture extension. All three pillars of Agriculture Development, such as Research, Education and Extension, should be brought under one umbrella, both at Federal and Provincial set-up. Efforts are thus needed to institutionalize research, extension and education linkages at National, Provincial and District levels.

DISPROPORTIONAL EDUCATIONAL AND FINANCIAL RESOURCE

About fifty percent (50%) of Agricultural Researchers are in Provincial Institutes. Federal Institutes, such as PARC, PAEC, PCCC and universities, have 17%, 7%, 3% and 23% of Agricultural Researchers, respectively. Highly learned staff (PhDs) are: 50 % with Universities, 32 % with Federal Institutes, and 18 % with Provincial Research Institutes. Province-wise details of PhDs are Punjab 77(9%), NWFP 30(8%), Sindh 5(3%) and Baluchistan 5(5%) (FAO-GOP Report 2002). Scientists at the universities are spending all their time in teaching. Their role in laboratory and out-reach research is non-significant. Agricultural Scientific Capacity in the provinces is very weak, where majority of R&D organization are mandated to perform research.

Agriculture sector contributes 25 percent to the National GDP, while it gets < 1.25 % of financial allocation in the Budget. This clearly indicates that, in the national budget, allocation of financial resources to the sector is not in proportion to its contribution.

Another anomaly within the Agriculture sector is that bulk of the Research Funds are used for crop-science research (79%), whereas small amounts are allocated to research on Livestock (7%) and Natural-resource management (8%). There is urgent need to rationalize resource-allocations at Federal, as well as Provincial, Research Institutes.

Continued advances are, of course, still needed in crop-production to meet the needs of growing populations but, over the next decades, there will be a disproportionate increase in the demand for livestock products, as compared with crop products, in order to meet the changing demands of peoples' diets (particularly driven by increasing urbanization and rises in per-capita income), and to address dietary deficiencies, particularly of women and children through provision of vital nutritional ingredients and micro-nutrients from animal sources.

The Agricultural Research System is a critical driver of the Nation's Economy. Investment in developing this system is thus a long-term economic imperative.

Rationalization of National Agricultural Research System in Pakistan

Resource Allocation to Agriculture-sector should be *at least 5% of the budget*, broken down as below:

- 2% for crop sector
- 3% for livestock sector

INEFFICIENT MANAGEMENT-SYSTEM

Pakistan had not inherited any major research organization in Agriculture-sector at the time of independence in the year 1947. Immediately after independence, a Food and Agriculture Conference was held in Lahore in the month of October 1947. Subsequently, an Expert Committee was constituted to organize Agricultural Research.

Food and Agriculture Committee (FAC) was formed under the Ministry of Food and Agriculture, which led to the establishment of Food and Agricultural Council of Pakistan (FACP) in 1951. First Agricultural University of the country was established at Faisalabad in the year 1961. Agricultural Research Council (ARC) was restructured in the year 1964, and its functional capacity was enhanced with help of USAID, and in 1981, ARC was renamed as Pakistan Agriculture Research Council (PARC). Agriculture Research Division (ARD) was created at PARC, to provide more administrative and financial powers to the PARC. However, this good decision was reversed in 1993, giving an administrative setback to PARC. In the year 1984, Agricultural Research System of North-West Frontier Province was reorganized under USAID's Transformation and Integration of the Provincial Agricultural Network (TIPAN) Project.

NARS was designed on the priorities, which are no more relevant to meet the needs of 2010. It is a well-established fact that NARS of Pakistan requires overhauling and rationalization. According to Quigley (1939), rationalization is a method of dealing with problems and processes in an established sequence of steps, thus: (1) isolate the problem; (2) separate it into its most obvious stages or areas; (3) enumerate the factors which determine the outcome desired in each stage or area; (4) vary the factors in a conscious, systematic, and (if possible) quantitative way, to maximize the outcome desired in the stage or area concerned; and (5) reassemble the stages or areas and check to see if the whole problem or process has been acceptably improved in the desired direction.

On the basis of this concept, the 4 proposals in the following paragraphs have been constructed to improve the NARS.

- We have to introduce a more knowledge-based Agricultural Research System. Therefore the development of human resource should be given first priority. Hundred percent increase in PhD scientists, provision of career-growth opportunities and creation of elite force of strong research managers is needed.
- Role of PARC as an apex body should be clearly defined and strengthened. The Chairman PARC should be given full power of Federal Secretary. PARC headquarter should act as Federal Ministry of Agricultural Research, Education and Extension.
- Prime Minister's High Power Committee on S & T (Dr. Munir A. Khan): Recommendations of subcommittees on Food and Agriculture, Edible Oil and Cotton require serious consideration and implementation.
- FAO Office at Islamabad, on the request of Government of Pakistan, prepared a report, which propose an "Agenda for Action" for senior Federal and Provincial policy-makers and research managers that must be addressed if Pakistan is to rebuild its agricultural technology-generation system, and be competitive in WTO regime.

Finally, Management skill in the R&D Organizations is very weak. Several institutes are having no focused or coherent program with a clear mission. It is therefore essential that each and every R&D organization should have a clearly defined mission, considering national priorities. It is also proposed that "Compendiums of S & T Management Practices" must be prepared for each R & D organization to restructure, revamp and reform the NARS.

REFERENCES

1. Ahmed, I.F.T. (1988) The bio-revolution in agriculture: Key to poverty alleviation in the Third world ILO Studies, International Labour Review, Vol.127, no.1.
2. Chris Somerville (2000). The Genetic Engineering of plants. In the proceedings of conference on "

- Biotechnology, the Science and the impact January 20-21, 2000 Netherlands Congress Centre, The Hague (Cyber cast of the conference).
- 3 FAO, GOP (2002). A Report on Rationalization of the Agricultural Research System, published by the office of the Food & Agriculture Organization, Islamabad, Pakistan. <http://www.fao.org>.
 - 4 Joske, F.G Bunders (1990). Biotechnology for small-scale farmers in Developing Countries. Analysis and Assessment Procedure Amsterdam: VLL University Press ISBN 90-6256-93-5-8 pp.1-232.
 - 5 Persley, G. (1989) *The application of biotechnology to agriculture in developing countries* AgBiotech News and Information 1989, Vol.1, no.1, pp.23-26.
 - 6 Quigley, Carroll, *The World Since 1939: A History*, Collier Books, New York, Collier Macmillan Ltd., London, Originally published as Part II TRAGEDY AND HOPE, pg 176-177
 - 7 Shikh; M.Kamal (2001). Agricultural Research & Extension Systems of Pakistan. In *Agricultural Research & Extension Systems in SAARC Countries* Published Dr. M.Abdul Razzaq. SAARC Agricultural Information Centre RARC Complex, Farm gate Dhaka 1215, Bangladesh pp87 to 106.
 - 8 Swaminathan, M.S. (1982) *Biotechnology research and Third world Agriculture Science*, Vol.218, pp.967-972.