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REDEFINING AGRICULTURAL EDUCATION AND EXTENSION SYSTEM IN CHANGED SCENARIO

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Preamble

The 20th century witnessed radical developments in Science and Technology. These developments had an impact on the social and economic changes that took place in the world. Such changes gradually influence the day to day life of people at the grassroots levels. Agriculture related science and technology had a major impact. Agricultural education and extension have been geared to harness the modern science and technology for higher productivity and production. This substantially helped to reduce the food scarcity in India. But sustainable food production is still the primary pursuit.

Economic liberalization and WTO regime pose a big challenge to Indian agriculture. To cope up with changed global scenario, agricultural education and extension would have to be redefined. This is a major concern for academics and policy makers. An approach to our own problems will have to be worked out. This, in turn, warrants reforms in agricultural educational systems.

Challenges and Issues

The agricultural education in India is faced with one of the biggest challenges. It has to identify its role in equipping the human resources for enhanced agricultural productivity and sustainable use of natural resources. Agricultural colleges and universities were initially assigned to disseminating scientific knowledge and skills to the farming community and to train them to use such skills for better output. As a backup for such a mission, agricultural research was encouraged to adapt the scientific knowledge to suit to the realities of rural societies. However, these initiatives could not keep pace with the fast changing scientific and technical improvements and gradually failed in their objective to cultivate the most modern skills and attitudes to both agricultural students and farmers. Developing a mechanism to update the curricula of agricultural education and extension, at least on a five-year regular basis, is crucial. This is very relevant to teaching, research and extension functions of the university as they form the inter-related, theoretical and practical basis of modern agricultural education in India. Moreover, the link between these three major strands is weak, particularly because extension is still not well recognized as the other two academic functions of the Agricultural University.

The knowledge, generated by research, often gets obsolete by the time it is disseminated through education / teaching and finally trickles down to farmers and practitioners through extension due to big lapse of time. The universities should consider this problem seriously and should reform their academic activities to strengthen the links between research, teaching and extension.

Economic liberalization and WTO regime demand manifold re-orientations in our agricultural education and extension system. Market oriented agricultural education and extension along with changes in agricultural marketing policy for the national and international markets is the need of the hour. A cadre of social scientists with clear insight into agricultural related disciplines, such as agricultural economics, agri-business, marketing management, rural sociology, agricultural anthropology, agricultural ethics and politics, has to be built up to provide the back up for solving the problem of globalization in

agriculture. This will imply total re-organization of agricultural education with emphasis on other agricultural related social sciences and effective agricultural policy research. Such a re-organization will empower our agri-graduates and scientists to face up the challenges posed by the demand of the national and international markets.

Any individual initiative needs certain motivation for sustenance. Pursuing agriculture as a profession / job for a considerable time is also influenced by motivational aspects such as monetary gains, employment, better quality of life and social acceptance. The number of agricultural producers is declining. The population that makes a living directly from agriculture continues to fall in developing countries. People, with rural background and engaged in traditional agriculture, are reluctant to let their children and younger generation to pursue agriculture as a full time profession. Those, with rural background and genuine interest in agriculture, do not have the basic education to go in for higher education in agriculture. This prompted the rural youth to go in for non-agricultural courses and moving in of urban based agriculture graduates without any practical knowledge of agriculture. Agricultural education has to be made more practical and rural realities oriented while agricultural extensions courses should be tuned to serve the needs of the rural community through dynamic interaction with rural societies. Such extension activities would enrich the academic institutions and universities.

Developing countries lag behind in introducing educational courses on environmental and sustainable agriculture. In India, too, there is a need to provide such a curricula re-orientation to academic institutions to create an environment sensitive faculty and to help bring about attitudinal changes among rural communities.

To examine these issues and make recommendations for needed reforms in agricultural education and extension system, a workshop was organized in Delhi by the National Academy of Agricultural Sciences (NAAS) under the Convernorship of Dr. Panjab Singh, Vice-Chancellor, BHU and formerly Director, School of Agriculture, IGNOU, on 10th December 2004. Organized in a panel discussion mode, it brought together 30 educationists with diversified experiences. A concept paper by the Convener was sent to the participants in advance to set the agenda for discussion. Each of the three sessions had a key speaker, followed by presentations from the panelists and open house discussion. These deliberations culminated in a set of recommendations after discussing the following issues in three sessions:

- Challenges Facing Agricultural Education and their Implications
- New Strategies and Institutional Reforms to Meet the Challenges
- Quality, Relevance, Reach and Preparedness.

Recommendations

1. Challenges facing Agricultural Education and their Implications

- There has been a dilution in the quality of agricultural education. Agricultural Universities, with inadequate infrastructure, financial support and autonomy have mushroomed. To ensure academic excellence, agricultural universities should have complete autonomy coupled with accountability.

- Dilution in the quality has been, mainly, due to an imbalance in the academic staff structure of the universities. The recruitment policy, and also the policy of freezing new recruitment, needs to be reviewed as presently about 40% of posts are lying vacant in these institutions.

- Centralized planning of Agricultural education system and curricula is not addressing the local needs to the extent required. There is tremendous disparity in regional assessment, as quite a number of regions of our country have not been benefited by the developments. There is a need for establishing more Central Agricultural Universities like IIT's.

- Rural students need to be encouraged to study in agricultural universities. Steps may be taken to promote such admissions as urban-based agricultural graduates are not so comfortable in rural environment.

- Specialized courses in educational technology should be developed to upgrade the teaching skills. A Teachers Training Institute in agriculture at the national level would help.

- After Research, Teaching and Extension, Training should be the fourth function of the Agricultural Universities. Directorate of HRD and Entrepreneurship could be considered to steer this function.

- ICAR and VCI systems of examination and evaluation in the same Agricultural University create disparity in assessing the quality of manpower generated. ICAR and the agricultural education system need an independent regulatory body like the UGC to streamline and give direction to the system.

- The agricultural education system needs to be redefined so as to equip the new graduates with subject competency, self motivation, positive attitude, agri-business skills, knowledge of computer and information technology, and communication skills in both English and regional languages.

- A Manpower planning document is needed at the Central and State level for proper Agricultural Education management including employment.

- A clear proportion for the financial allocation for agricultural education, research and extension education needs to be formulated. At present, only 10% of ICAR budget is spent on education.

- More time and energy have to be earmarked by teachers for extension education programmes and activities to be fully aware of the farmers' problems. Teachers should also help to disseminate the traditional knowhow and technologies of farmers.

- SAUs should have unified administration and complementarity of departments and multidisciplinary teamwork in the development of programmes of education, research and extension. The Model Act of the ICAR should reflect in the functioning of the State Agricultural Universities (SAUs) and deemed universities.

- Systems could be put in place at SAUs for quick communication of new knowledge to students in class-rooms, extension workers and farmers. SAUs could have flexible course-credit system buttressed by continuous internal evaluation.

- SAUs could provide regular specialized training to rural youth, particularly school dropouts, and adults who are not eligible for enrolling for formal agricultural courses.

- An SAU could have corporate board of management with adequate powers under the university act and have organizational and operational autonomy.

- The successful models in agriculture demonstrated by the private sector, business groups and industries involved in agriculture should be studied and adopted. The private sector should be given a bigger role in agriculture extension policies/ activities being planned / implemented by the State and Central Governments.

- In the liberalised educational policy scenario at the national, regional and global levels, it is essential to have a better coordination between institutions and universities to implement restructured and relevant courses. Private-public partnership, to strengthen the present system of education, research and extension in India, is need of the hour. Roping in talented scientists of the private agri-research sector as guest teachers in Agricultural Universities could be a first step towards this end.

- The curriculum should be regularly updated to incorporate the changes in agricultural scenario. Specific curricula could be developed for technological and skill development of women in market driven technological enterprises and sustainable management of natural resources.

- The Planning Commission found in 2000 that the contribution of the primary sector (mostly driven by agriculture) was on the decline while the tertiary sector (driven by industry) was having a slower growth. The agricultural education system needs to be reoriented to cater to the needs of the emerging sectors and to ensure that excess manpower is not generated in slow growing sectors.

- Agricultural education should lay increased emphasis in future on topics like, alternate farming, bio-fertilizers, pressurized irrigation, integrated water management, integrated nutrient management, integrated pest, disease and weed management, resource optimization, post harvest technology and value addition, and marketing.

2. New Strategies and Institutional Reforms to meet the Challenges

- The basic objective in redefining agricultural education in the changing scenario is to promote development and delivery of educational programmes that would enhance the employment potential and build up an easy, accessible and cost effective knowledge intensive information system. The guiding principles, approach and strategies are as follows:

(a) Guiding Principles

- Initiatives should have long term impact.
- The focus should be on ameliorating quality, relevance and reach.
- Linkage with the market requirements and demand of stakeholders.

(b) Approach

- Performance and output oriented.
- Optimal utilization of existing infrastructure and resource.

(c) Strategies

(i) Education

- Shaping up academic environment through total quality management at all levels.

- Entrepreneurship development and self-employment orientation in agricultural education should receive high priority through infusion of vocational courses (certificate/diploma levels).
- Periodic review and revision of curriculum consistent with national and global scenario, market trends, self-employment avenues and industries requirements.
- Devising of Qualification Framework.
- Make Agricultural Education an independent subject at School level and integrate it with the higher education system.
- Emphasis on Distance Education in Agriculture with extensive use of innovations of IT, digitalization of course content, virtual universities, *e*-learning and video conferencing.
- ICAR needs to play a more pro-active role in initiating, implementing, reviewing and monitoring reforms in education system.
- Distinguish agricultural education from training for public service, thereby, fostering training aimed at meeting the needs of the private sector and preparing students for entrepreneurship.
- The educational system today suffers from lack of accountability of the teachers and institutions. The quality of individual institutions be critically assessed, and the accreditation system should be made more stringent to enforce accountability.
- Facilitate, promote and support agreements, cooperation and coordination at inter-institutional and international levels.
- Promote integration of population, environment and sustainable development themes into agricultural education and extension programme. Include specialized training in degree programmes.
- Develop well trained human resource for doing research in advanced areas of science to become internationally competitive.

(ii) Research

- Need a paradigm shift from single discipline orientation to multi-disciplinary approach.
- Encourage privatization, planning, monitoring, evaluation and assessment as core component of research management process.

(iii) Extension

- Harness benefits of new scientific advances such as bio-technology, cloning, remote sensing, modeling, information and IT for farmers and rural communities. Internet aided extension networks have to be materialized.
- KVK's have to be strengthened as nerve centre for dissemination of technical knowhow.
- Extension programmes to be based on rural participatory approach.
- Formation of commodity specific extension kiosk on indigenous food, horticultural crops, livestock, poultry, rabbitry, bee keeping, mushroom, medicinal and aromatic plants, sericulture, tea and value addition enterprises.
- Distance education for farmers and small agri-entrepreneurs need to be explored and strengthened through television, radio, interactive audio and video systems, besides print and programmed learning materials which would be the distinguishing feature of extension teaching and learning process.

(d) Institutional Reforms

- Effective partnership linkages with advanced centres of education in the country and abroad.
- Greater autonomy to academic institutions, SAUs and statutory power to ICAR.

3. Quality, Relevance, Reach and our Preparedness

- Though quality is a very important issue in Agricultural Education and Extension, it was given least importance at present. A Total Quality Management (TQM) system should be evolved to ensure quality education.

- The concept of total quality management must refer to conforming to the expectation of the stakeholders. The paradigm shift in agricultural education should include teaching students not just what is currently known but also to keep them abreast of the new knowledge essential for meeting the challenges of new economic environment and all that would contribute to socio-economic development and public good. The education should lead to development of analytical skills, exposure to international marketing, total quality standards and comparative advantages. It should also facilitate confidence in ensuring sustainability with high productivity and quality of the produce while meeting international standards. Post-harvest technology and value-addition are also key to maximum benefits from exports.

- Total quality management in agricultural education needs to focus on improving quality of courses, instructional processes, human centered development, students support services, building strong work culture and electronic communication system. Ultimately, the quality and skills being imparted must inculcate expectations of different stakeholders.

- Universities could provide non-formal education and vocational course including technological empowerment of women and rural youth through distance education.

- The private colleges that provide high quality agricultural education should be given accreditation with the Central and State Government Universities. These colleges/universities should also be given assistance to sustain their quality and standard.

- Training is an important component. Training Institutes of high quality should be established on urgent basis to provide better training to both in-service and out side personnel in agriculture. Distance learning methods are recommended to meet the high demand on training.

- Exchanging academics between ICAR and SAUs should be encouraged to avoid inbreeding and encourage quality of agricultural education.

- Agriculture is increasingly demanding interface with industry, and hence short-term and long-term self-supporting courses on agri-business and marketing should be developed by the Central and State Universities. The experience of IGNOU, and State Open Universities should be taken into account in this regard.

- Agricultural students and practitioners are aware of the quality aspects, but they don't put them in practice. This attitude must change. Research, training and extension agriculture should be in continuum in for achieving quality ideals. Young people should be encouraged to the system and contribute fresh ideas.

- Practical aspects that need prominence in the curriculum are absent in the present system. SAUs should run short-term courses for Plus-Two level students to enable them in engaging themselves in income generating activities. Suitable tie-ups with industry should also be encouraged to enhance the relevance in agricultural education.

- The recommended 10% raise in funding every year is not implemented by the Government and Universities. This adversely affected upgrading the facilities/quality of agricultural education. Centres of Excellencies should be identified and the responsibility of revamping agricultural programmes should be given to these institutions.

- **Revamping Agricultural Education**

o Re-orienting and modifying the course curriculum to suit the demands of the job markets and to bridge the mis-match between manpower demand and availability in different areas should be done.

o In curriculum, post harvest technology, agro-processing value-addition, marketing and entrepreneurship development as well as management intricacies should be given emphasis.

o Agricultural Education should be made innovative to absorb futuristic trends and skill-orientation rather than based on note-memorisation of new knowledge.

o Agricultural Education System should produce professionals and for that, the system has to balance between classroom teaching and practical sessions and experiential learning based on actual work-based experience.

o Establishing and creating facilities/infrastructures for in-plant experiential learning in SAUs and Agricultural Colleges.

- **Revamping Agriculture Extension Education**

o Transfer of Technology Mode to Technology Application Mode

o Group approach and farmers participatory approach to Agricultural Extension.

o Involvement of community-based organisations

o Associating stake-holders in Extension

o Formation and training of self-help groups and extension through them

o Rural location - specific knowledge centre

o Need-based, problem-solving, skill-based vocational training for self-employment for farmers, farm women and rural youth

o Shift to commercial farming and agri-business approach in Extension

o Linkages between extension education, continuing education, non-formal education, distance education and vocational education, so that each supports and strengthens the efforts of the other and *vice-versa*.

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1.	Agricultural Scientist's Perceptions on National Water Policy	- 1995
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