

Competency development in Agricultural Education and Extension: analysis and advocacy

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Abstract

The process, products and management of Agriculture education is of paramount importance for India where majority of people live in rural area depending on Agriculture as main livelihood. Though the Journey of Agriculture education intensified during green revolution but it is quite mismatching in present day requirement. The course curriculum, infrastructure, student intake, entrepreneurship building and employability are the issues concern for everybody. In addition to these problems there are also challenges for suitable production and market of agricultural produces. These questions led the author to search for the remedies. The paper is based on NARS policy papers and reviews on Agriculture education and extension. The manuscript depicts the challenges, solutions, recommendations for Agriculture education and extension. The authors are in opinion that there is need of involvement of various stake holders for making Agriculture more useful, enterprising and employable.

Key words: Challenges, Agriculture education, Extension, sustainability, employment, market

Agriculture in India has a long history in its growth and development of Indian society. Different reforms and Extension mechanisms including the great green revolution has brought glories of food production and farmers' livelihood development. However, there are still enough gaps between the developed and third world countries in Agricultural research and Extension activities. Hence, Agricultural education, teaching and extension activities need to be changed its way, process and products to meet the recent global challenges of unemployment, climate change and sustainable development. The agricultural education in India is facing many 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 disseminate 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. In India presently we see four kinds of Agricultural Education/Extension System such as ICAR system, SAUs, Ministry of Agriculture and Private agencies. Combining all the efforts we see that the transfer of technology is only around 40-45 percent in the society. Competency among undergraduate agriculture students with respect to pure Agriculture research and marketing is at very low range. It is high time that a comprehensive model of quality Education. Research, Training, Extension and Agricultural marketing to cater the need of farmers, youth, women as well as the Agriculture students, change agents of the developmental programmes.

Some important views on Agricultural Education

McCracken (1983) stated that agricultural education be further developed as a profession. We need leaders in our profession who will work together in charting a new course for future. We need leaders in our profession who will work together in charting the nature of our program... this intellectual discussion and debate will require of us that we become academicians and philosophers.

Shin and Cheek (1981) views that Leaders in agricultural education must be able to synthesize technical agricultural information and plan programs to help solve the problems associated with energy, productivity, and world trends in the agricultural industry.

Ed Osborne (2011) suggests that we need to embrace the notion that agricultural education is a single, broad social and behavioral science discipline that includes teaching and learning in formal and non-formal settings; reaching widely varied target audiences through interpersonal, group, and mass communications; and strengthening the leadership capacity and effectiveness of individuals and organizations – education, communication, and leadership all within an agriculture and natural resources context.”

Mabie & Baker (1996) revealed that using agriculture improves the acquisition of basic science and mathematics process skills of elementary students.

Amber L.Dailey et al. (2001) advocates that the purpose of Agriculture education is to develop a love and understanding for agriculture, educating students and adults as to its importance, and the promotion of literacy throughout educational and community systems.”

Swortzel (1996) opined that SAEs bridge the gap between the class room and work by providing students opportunities to apply what they have learned in the classroom and to transfer those knowledge and skills to a real world situation.

It is to mention here that Agriculture Education in USA is made up of three integrated parts: Classroom instruction, FFA and Supervised Agricultural Experience (SAE).The word FFA stands for Future farmers of America.

Challenge no -1.Well equipped Human resource to maintain the agricultural productivity, sustainability of natural resources

Agricultural colleges and universities were initially assigned to disseminate scientific knowledge and skills to the farming community and to train them to use such skills for optimum output. As a backup for such a mission, agricultural research was encouraged to adapt the scientific knowledge to suit to the realities and challenges 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 agriculture 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 and it has been followed in Indian Agriculture education system. 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.

In India, too, there is a need to provide such a curricula reorientation to academic institutions to create an environment sensitive faculty and to help bring about attitudinal changes among rural communities.

Challenge no: 2.Lack of proper Understanding and interest in Extension Education

The linkage between teachings, research and extension is weak, particularly because extension is still not well recognized and used properly as the other two academic functions of the Agricultural University (Warner et al 1996). 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. In Economic liberalization and WTO regime there is demand of manifold re-orientations in our agricultural education and extension system by harnessing benefits of new scientific advances such as bio-technology, cloning, remote sensing, modeling, information and IT for farmers and rural communities. E-Extension or Internet aided extension networks have to be materialized by strengthening KVKs which are the nerve centers for dissemination of technical know-how. There is need of change in extension from Transfer of Technology Mode to Technology Application Mode by initiating Group approach and farmers' participatory approach of .Agricultural Extension. Inclusion of Community-based organizations, stake-holders in Extension Formation and training of self-help groups and extension through Rural location - specific knowledge centre would serve the need of present extension service. Extension Education and training needs focus on need-based, problem-solving, skill-based vocational enterprises for self-employment for farmers, farm women and rural youth. Present day Agriculture is shifting to commercial farming and agri-business approach. So there is need to establish Linkages among 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. It is necessary to mention here that formation of commodity specific extension kiosk on indigenous food, horticultural crops, livestock, poultry, bee keeping, mushroom, medicinal and aromatic plants, and sericulture, tea and value addition enterprises would Indian Agriculture towards sustainability. 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.

Challenge no 3. Marketability of process and products of Agricultural education

There has been a dilution in the quality of agricultural education with mushrooming growth of Agricultural Universities, with inadequate infrastructure, financial support and autonomy. Agricultural universities should have complete autonomy coupled with accountability to ensure academic excellence. 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 30-40% 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 because urban-based agricultural graduates are not so comfortable in rural environment.

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 implies 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 the challenges posed by the demand of the national and international markets.

Challenge no-4-Absence of considering Agriculture as profession

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 has 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

Considerations for improving Agricultural education

There is need to develop specialized courses in educational technology to upgrade the teaching skills. A national level Teachers Training Institute in agriculture is an urgent requirement to be fulfilled for agriculture Education and training. After Research, Teaching and Extension, training is 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. The 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. It has been realized for the teachers to disseminate the traditional know-how and technologies of farmers. It is time for the SAUs to have unified administration and complementarily of departments and multidisciplinary teamwork in the development of programmes of education, research and extension with flexible course-credit system buttressed by continuous internal evaluation. The SAUs could provide regular specialized training to rural youth, particularly school dropouts, and adults who are not eligible for enrolling for formal agricultural courses. For effective functioning, the SAU could incorporate board of management with adequate powers under the university act and have organizational and operational autonomy, 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 course (certificate/diploma levels). There is need to review and revise the curriculum consistent with national and global scenario, market trends, and self-employment avenues and industries requirements.

How bring the dream in to reality?

In India, we need to make Agricultural Education an independent subject at School level and integrate it with the higher education system. It is imperative now to emphasize on Agriculture education with extensive use of innovations of IT, digitalization of course content, virtual universities, *e-learning* and video conferencing. Here the ICAR needs to play a more pro-active role in initiating, implementing, reviewing and monitoring reforms in education system. 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 by facilitating, promoting and supporting agreements, cooperation and coordination at inter institutional and international levels. This will develop well trained human resource for doing research in advanced areas of science to become internationally competitive. 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. **In this context it is required to** establish and create facilities/infrastructures for in-plant experiential learning in SAUs and Agricultural Colleges.

Integrating Agriculture with Other Stake Holders

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 liberalized 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 (Graham2001). 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.

Research in Agriculture:

There is need a paradigm shift from single discipline orientation to multi-disciplinary approach by encouraging privatization, planning, monitoring, evaluation and assessment as core component of research management process

Quality, Relevance, Reach and our Preparedness

Though quality is a very important issue in Agricultural Education and Extension, it is at 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. The Post-harvest technology and value-addition are also key to maximize benefits from exports. Total quality management in agricultural education needs to focus on improving quality of courses, instructional processes, human centered development, and students support services, building strong work culture and electronic communication system. Ultimately, the quality and skills being imparted must inculcate expectations of different Stakeholders. The Agriculture 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 (Kumar,

2005). 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 in 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. The Centers of Excellencies should be identified for the responsibility of revamping agricultural programmes and education.

Reference:

Dailey, A. L., Conroy, C. A., & Shelly-Tolbert. C. A. (2001). Using agricultural education as the context to teach life skills. *Journal of Agricultural Education*. 42(1):11-20.

Graham,L.D.(2001).Employer perception and preparation of Agricultural and Extension Education graduates, *Journal of Southern Agricultural Education research*, Volume 51.pp 88-101 , <http://www.jsaer.org/pdf/Vol51/51-00-088.pdf> retrieved on 25.20.2010

Kumar V.M.(2005).Redefining Agricultural and Extension System in changed scenario, Policy paper-31, NAAS Documents on Policy Issues National Academy of Science, New Delhi pp-8

Mabie, R., & Baker, M. (1996). A comparison of experimental instructional strategies upon the science process skills of urban elementary students. *Journal of Agricultural Education*, 37(2), 1-7.

McCracken, J.D. (1983). A profession in need of academicians. *The Journal of the American Association of Teacher Educators in Agriculture*, 29(3), 50-58.

Osborne, Ed. 2011. Taking Agricultural Education to the Next Level, *Journal of Agricultural Education*. Volume 52 n1, pp. 1-8

Shinn, G.C. & Cheek, J.G. (1981). Agricultural teacher education functions can be delivered more effectively through a department of agricultural and extension education. *The Journal of the American Association of Teacher Educators in Agriculture*, 22(2), 308, 63.

Swortzel, K. (1996). Perceptions regarding planning activities and supervision strategies for supervised agricultural experience programs. *Journal of Agricultural Education*, 37(2), 47-56.

Warner, P.D., Christenson J. A., Dillman, Don A and Priscilla S. (1996). Public Perception of Extension, Volume 34, Number 4, *Journal of Extension* <http://www.joe.org/joe/1996august/a1.php> retrieved on 25.2.2010