Revitalizing Agricultural Extension Curricula in the 21st Century: Implications for Indian Agricultural Universities

Rama B. Radhakrishna, Associate Professor
Department of Agricultural and Extension Education
The Pennsylvania State University
318 Agricultural Administration Building
University Park, PA 16802
brr100@psu.edu

V. Veerabhadaiah, Professor
Director of Agricultural Extension
University of Agricultural Sciences
Hebbal, Bangalore-560024, India

Abstract
Agricultural universities modeled on the tripartite mission of the U.S. land grant system were established in India to produce the technical manpower needed through education. India has achieved significant progress in agricultural development leading to self-sufficiency in food production. Far-reaching changes have occurred in Indian agriculture since 1991 under the new economic policy, globalization, and World Trade Organization. As a result of these rapid changes, a need exists for reexamining the agricultural extension curricula to meet the challenges of the 21st century.
This study examined the continued relevance of current agricultural extension curricula in Indian agricultural colleges and universities in the context of changes occurring in Indian agriculture. The recent National Seminar on the Extension Role of State Agricultural Universities was used as a framework for the study.

The changing agricultural scenario has provided both challenges and opportunities for agricultural extension educators to revitalize curricula. Need exists for integrating knowledge from different disciplines and from basic and applied sciences. Strategies suggested include: interdisciplinary approach to course development, distance education, networking with private agencies and NGOs, and strong linkage between research and extension. Core courses should be identified and offered at both undergraduate and graduate levels. Need of the hour is developing and offering courses in post-harvest technology, market intelligence and quality control, value addition, and information and communication technology.

### Introduction

Several agricultural universities were established in India in the early 1960s to produce desirable technical manpower through education, development and dissemination of useful technologies in agriculture to the clientele. These universities adopted the tripartite function of U.S. land-grant system (Hansra, 2001). At present there are about 29 agricultural universities.

Forty years have passed since the establishment of the first agricultural university in India. During this time, India has achieved tremendous progress in the post-green revolution period (1966 and after). Most notable is self-sufficiency in food production with more than 80% of the Indian households having at least two meals a day. Efforts of agricultural extension boosted production of high yielding varieties and increased the use of new technologies (Radhakrishna, 1997 and Narasimha, Ranganath, and Chandrakanth, 1992). The role played by agricultural universities have been appreciated by a majority of the people (Doddahanumaiah and Murthy, 2001). Further, far-reaching changes have taken place in India since 1991 under the new economic policy, General Agreement on Trade and Tariffs (GATT), globalization, and India’s entry to World Trade Organization (WTO).

Revitalizing agricultural curricula is not new. Several studies and reports on agricultural curricula, both in the United States and India, have provided directions for the future. For example, Lyons (1988) used a Delphi technique to identify agricultural curricula content and delivery methodology changes needed to enhance the undergraduate experience in colleges of agriculture in the United States. A total of 22 change strategies were identified—14 in the content area and eight in the delivery/methodology area that should be implemented in the colleges of agriculture. Major content area changes included information and management (problem solving, critical thinking, and decision making) and communication skills (writing and speaking). The delivery/methodology changes included problem solving, writing to initiate thought, and practical experiences (hands-on experiences, oral student presentations and the use of case studies).

from a holistic approach. He called for a greater emphasis on interdisciplinary curricula in colleges of agriculture.

Boyer (1987) in describing the total undergraduate experience concluded that there is a “disturbing gap between college and the larger world. As we think of an appropriate curriculum, we must consider the linkage between what is learned within educational institutions and the method of acquisition and application in the larger society.”

In the context of changing agricultural scenario, redefining the extension role, especially revitalizing the agricultural extension curricula in Indian colleges and universities has become inevitable. This requires urgent shift in extension teaching and research activities because of: 1) job markets for extension personnel demand quite different competencies than what are being imparted at present (Prasad, 2001), 2) the approach and orientation of extension in NGOs, agro-chemical companies, input agencies, etc. is quite different from that of public sector extension systems, 3) many of the critical social skills essential for field extension work are not provided in the existing curriculum of undergraduate extension courses (Sulaiman and van den Ban, 2000), and 4) students graduating from agricultural colleges are not adequately prepared to meet the emerging challenges (globalization, market oriented economy, including market intelligence, processing, quality control, etc.) of the 21st century. Further, an aggressive marketing of the discipline of extension is needed, especially in the context of other disciplines competing for many jobs in the areas of rural development, where extension had a monopoly in the past (Prasad, 2001).

Sulaiman and van den Ban (2000) suggested several steps to restructuring agricultural extension curricula which included: 1) assessment of challenges, 2) analysis of changing job market, 3) agreement on goals of program, 4) decision on knowledge, skills and attitudes required to meet the challenges, 5) designing and developing course package, that is, deciding on appropriate mix of theory and practicals, and 6) marketing the extension discipline. They suggested that in order to prepare students for the present-day needs, more training is needed in participatory extension approaches, organizing farmers’ groups, planning extension strategies to meet farmer’ needs, human resource development, and the use of information and communication technologies.

As indicated by Perumal (2001), the changing scenario of agriculture in the 21st century, calls for every system to adjust, revamp, reexamine, and reconsider the broad spheres of agricultural development. To respond to this challenge, we must reevaluate the content of the curriculum and the manner in which we deliver such curricula. Systematic efforts must be taken to identify curricular strategies needed to develop an educated person to meet the present day challenges of globalization and a market-driven economy.

**Purpose**

This study examined the continued relevance of current agricultural extension curricula in Indian agricultural colleges and universities in the context of the rapid changes that are occurring in Indian agriculture. The justification was that agricultural extension needs a thorough reorientation in preparing graduates for the market-oriented economy. In addition, a need exists for reorienting the content and delivery strategies currently used by agricultural extension departments. The themes identified in the recent seminar on extension role of agricultural universities were examined and used as a framework to suggest implications for agricultural universities. The implications mainly focused on identifying and developing core courses in agricultural extension to address the challenges of the 21st century.
Methods and Data Sources

In June 2001, a National Seminar on Extension Role of Agricultural Universities was held in Bangalore, India. Several scholars, administrators, policy makers and students presented lead papers and abstracts relative to the extension role of state agricultural universities. Examples include: history of extension education, research-extension linkage, curricular changes, extension capacity building, distance and communication technology, globalization, and WTO. The organizers of the seminar grouped the lead paper presentations and abstracts into several themes (see Figure 1). These themes will help prioritize teaching, research, and extension activities and assist in developing a framework to develop and/or design, implement or deliver courses, research projects, and extension programs. The lead papers and abstracts presented served as information source to examine curricular changes in agricultural extension. Past syllabi from universities were also collected to determine current course offerings in agricultural extension. In addition, agricultural and extension education curricula of select universities in the U.S. were also reviewed.

Results and/or Findings

Historically, agricultural extension courses have focused around traditional areas--extension methods, history of extension, adoption-diffusion, communication, etc. Agricultural extension curriculum is heavily loaded with lectures. Course content in most agricultural programs comprise of basic introductory concepts in sociology, economics, psychology and other disciplines. According to Sulaiman (1996), curricula for a master’s program in agricultural extension included a mixture of courses drawn from different areas (program planning, extension method, audio-visual, training, fundamentals of sociology, psychology, leadership etc.). Training in research methods at the postgraduate level is also very weak with limited attention given to qualitative research methods. In addition, development of depth in subject matter specialization skills are also lacking at the postgraduate level (Sulaiman and van den Ban, 2000).

In view of the rapid changes occurring in Indian agriculture, there is a need to revitalize, reorient and reexamine agricultural extension course offerings. Examination of Figure 1 reveals a need for changing agricultural extension curricula to meet the challenges of the 21st century. First, faculty teaching agricultural extension and agricultural economics and rural sociology should come together or design courses that reflect the current needs of market driven economy. Students should be exposed to the interplay of economics, prices, competition, etc. In addition, there is a critical need for developing courses in post-harvest technology--processing, grading and standardization, quality control, storage. Similarly, training and workshops should be conducted to highlight the importance and need for inservice education in the above-mentioned subject matter topics.

Ray (2001) suggests that extension curricula should focus on identification of core courses which should include 1) level of teaching, level of interdisciplinary faculty, and 3) credit hours. Courses in agribusiness, economics, cooperatives, administration and management, marketing intelligence and quality control should be emphasized.

Several scholars have recognized the need for integrating knowledge from different disciplines and from the basic and applied sciences (Ray, 2001; Sulaiman and van den Ban, 2000; Magrath, 1999; and Csaki, 1999). Integration, they argue, is critical to solving agricultural development problems around the world. Therefore, there is a need to recognize current curricula in agricultural universities with an interdisciplinary focus.
Extension personnel (both at the university and state level) need to take a lead in fostering an environment that encourages NGOs, agribusiness, mass communication, media, education, local communities and farmer groups to assume greater roles in carrying out the extension teaching function. Collaboration and networking between and among agencies is critical to offering courses that prepare students for the market-driven economy.

Faculty and graduate students should be prepared to teach courses via distance. Available information and communication technology should be utilized. The audiences for these courses include extension agents and professionals, farmers and youth leaders. India should utilize this vast technological resource to the best advantage. Careful planning is a key to successful course offerings and programs via distance. Further, information technologies such as the Internet, interactive multimedia, Geographic Information System (GIS), and desktop publishing will facilitate the creation of sound knowledge base and dissemination of knowledge among scientists, and extension personnel. As suggested by Saravanan and Katteppa (2001), information technology promises timely information for decision-making, faster exchange of information, easy access of knowledge, continuous information availability, and cost effective information.

**Figure 1. Framework for Revitalizing Agricultural Extension Curricula**

**Educational Importance**

The changing agricultural scenario has provided both challenges and opportunities to agricultural extension educators to revitalize curricula in Indian agricultural colleges and universities. Agricultural and extension educators should take advantage of the opportunities to be proactive than reactive. Suggested strategies include: interdisciplinary approach to course development and offerings, networking with other private agencies and NGOs, and strong linkage between extension and research, will help educators to adequately prepare and meet the challenges and opportunities.

Indian farmers, in the beginning, were hard to convince the benefits of new agricultural technologies. But, now, promotion of these technologies does not require great effort. What is needed today is an approach (method and message) that helps understand new roles of extension educators in the new market driven economy. The new roles may be in the form of information relative to competing in the world market, preparing produce for the
market, post harvest technology, understanding of sustainability and environmental concerns. It is believed that such an approach and effort will instill confidence among farmers and better serve their needs. New courses should to be developed in these areas with an interdisciplinary focus.

The findings from the FAO report on the role of agriculture in the developing countries and their integration into the world economy is worthy of discussion in the context of this paper. FAO states, “Weak extension and training services and the consequent lack of technological knowledge of farmers are often considered to be the major factors behind the insufficient adoption of improved technologies. This constraint could be overcome by improving farmers’ access to information. Given this FAO finding, Indian agricultural colleges and universities should focus on identifying and developing ways and means to address the information needs of farmers. Extension services and universities should make use of the communications and information technologies (access to computers, access to information, distance education) to educate farmers on various issues related to farming. A first step in this direction would be to modernize the information technology devices in extension education units. In addition, networking among different state agricultural universities should be undertaken to facilitate flow of information.

Several experts from a variety of backgrounds have concurred that curricula changes are necessary in helping to enhance the undergraduate experience in colleges of agriculture and make such experiences more relevant to real world situations.

As we identify strategies in response to the initiative to strengthen higher education degree programs in Indian agricultural colleges and universities, we must encourage faculty to pursue curriculum revisions, which enable graduates to meet employment needs. These changes should reflect both what the students want and need in order to compete and function in the world of work.

Finally, the overriding question for extension systems, both in India and in other countries, is how well agricultural universities and extension units are positioning themselves to address the changes that are occurring in their respective nations. The Association for International Agricultural and Extension Education which is committed to promoting and studying international agricultural and extension education issues can assist in finding answers to this question.

References


