

**QUALITY OF AGRICULTURAL EDUCATION
IN THE CONTEXT OF
NATIONAL AND INTERNATIONAL COMMITMENTS**

PROCEEDINGS

**OF THE
29TH ANNUAL CONVENTION
OF
INDIAN AGRICULTURAL UNIVERSITIES ASSOCIATION
HELD ON
JANUARY 12-13, 2005**



**CHAUDHARY CHARAN SINGH
HARYANA AGRICULTURAL UNIVERSITY, HISAR - 125 004 (HARYANA)**



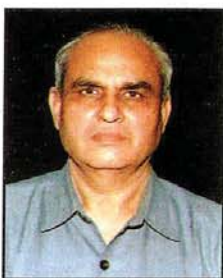


जे.सी. कत्याल

उप महानिदेशक (शिक्षा)

J. C. KATYAL

Deputy Director General (Education)



भारतीय कृषि अनुसंधान परिषद

कृषि अनुसंधान भवन -II

पूसा, नई दिल्ली 110 012

**INDIAN COUNCIL OF AGRICULTURAL
RESEARCH**

KRISHI ANUSANDHAN BHAVAN-II

PUSA, NEW DELHI 110 012

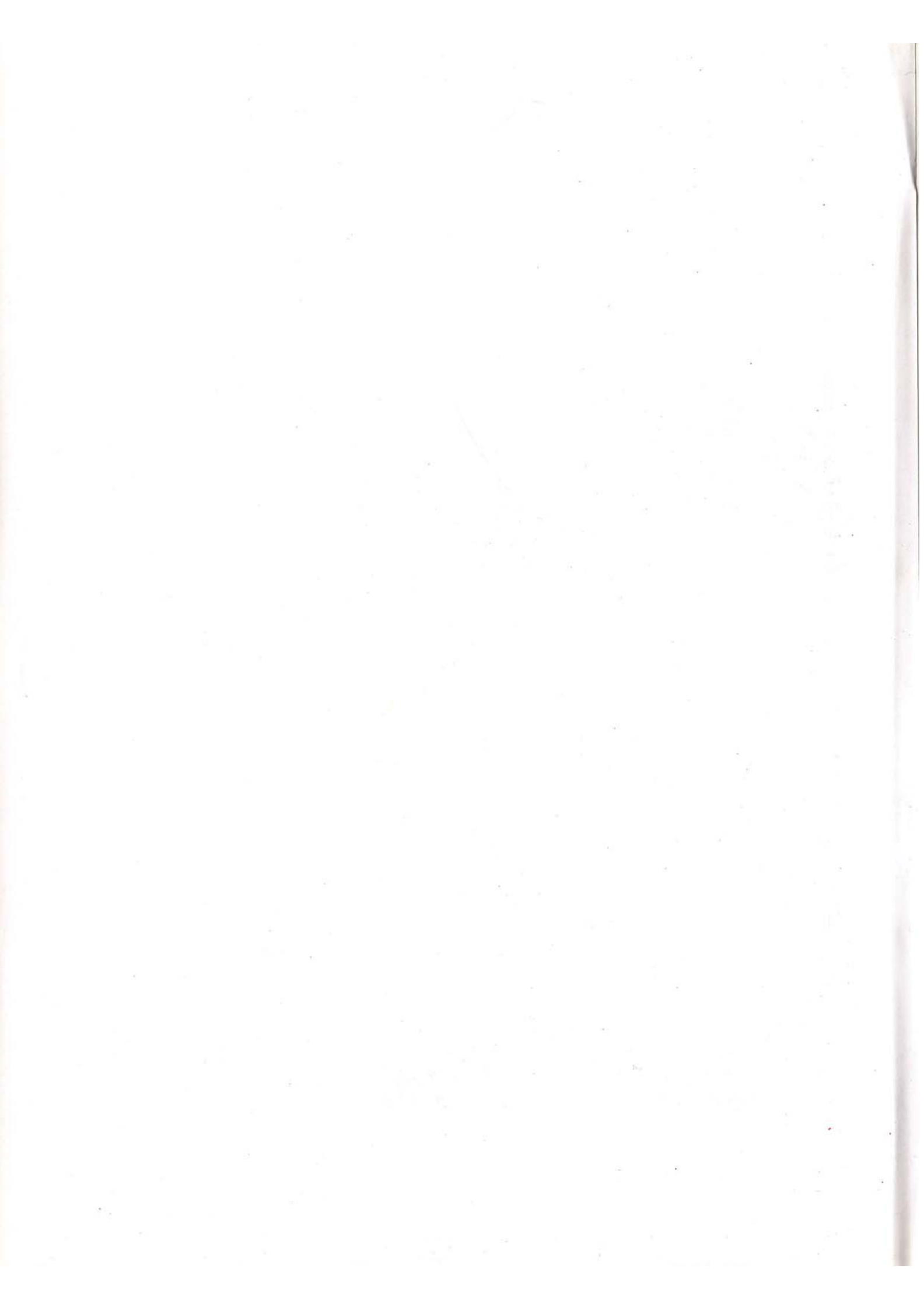
FOREWORD

Agriculture is the backbone of Indian economy and human resource development in agriculture is very important in the present scenario. State Agricultural Universities made significant contribution under the aegis of the Indian Council of Agricultural Research in ushering in Green Revolution and now striving for Evergreen Revolution. In this context, tackling second generation problems to increase food production for ever increasing population is of utmost importance. The Agricultural Education System in our country is hard pressed to keep pace with the technological, economic and social developments taking place nationally and internationally. We should cope up with the changes in consumer-led agriculture through changes in education system. We need to move from commodity centric to system approach and from primary producer to secondary producer by adding value in the existing and emerging food chain. This would need a paradigm shift in the agricultural education system to meet the demands of stakeholders. Strong need is, therefore, felt to re-vitalize and re-engineer our agricultural education system, so that competent human resource is developed that can meet the challenges of sustainable development of agriculture.

Education in agricultural universities is confronted with a large number of problems which have led to dwindling of standards at various levels of educational process. There are problems in developing faculty competence and resource base for agricultural graduates to serve the job market on the one hand and the sharp decline in the public sector employment opportunities on the other. Hence, it is in the national interest that education for agriculture receives overriding priority. Also regulatory role by a nodal agency like ICAR to implement governance norms, educational reforms and syllabi in SAUs in a uniform manner to enhance synergy among educational institutes would be of paramount importance. The IAUA sponsored convention on 'Quality of Agricultural Education in the Context of National and International Commitments' held on January 12-13, 2005 at CCS Haryana Agricultural University, Hisar has helped sensitizing issues of higher education in agriculture by the top level managers of agricultural education and provided a platform for a lively dialogue on these crucial issues. I am sure that the deliberations and recommendations on quality improvement of agricultural education will have long term impact on reshaping agricultural education system to meet the contemporary and future needs in national and global perspectives.

J. C. Katyal

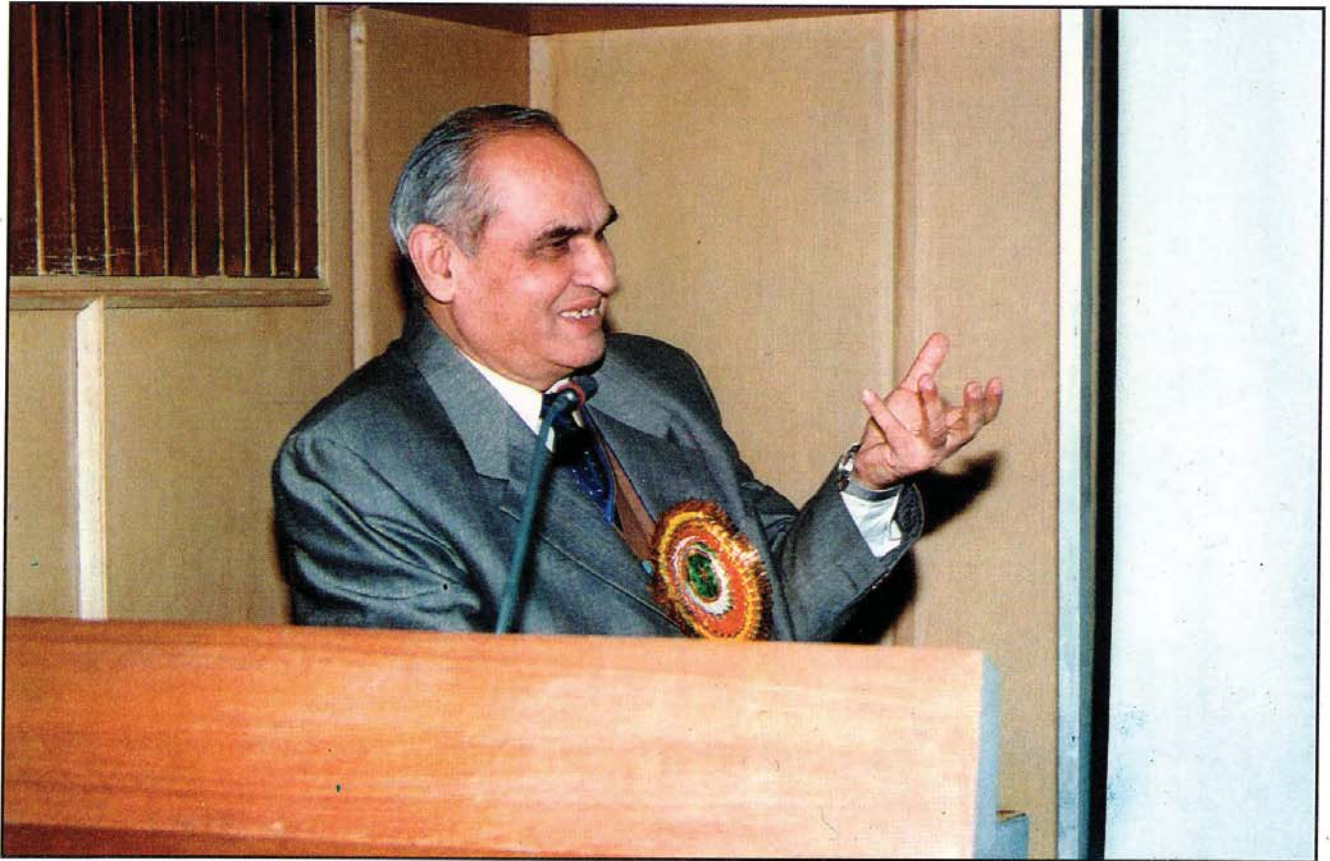
(J. C. Katyal)





In a speech to the Convention, Dr. Mangala Rai, Director General, ICAR & Secretary, DARE outlined the progress made by ICAR in education. He called on the Vice-Chancellors to develop niche areas at each State Agricultural University for Human Resource Development network in education and research.

He unveiled plans to have Centre of Excellence in niche areas at each SAU.



By drawing on our network of all State Agricultural Universities, deemed universities and ICAR institutes throughout India, Indian Agricultural Universities Association has established reputation for discussing and generating strategic plans and recommendations :
Dr. J. C. Katyal, Deputy Director General (Education), ICAR.



Dr. Mangala Rai, Director General, ICAR & Secretary, DARE
arriving at the inaugural function.



Dr. Mangala Rai, Director General, ICAR & Secretary, DARE is seen
at the poster exhibition.



Dr. Mangala Rai, Director General, ICAR & Secretary, DARE addressing the delegates at the 29th convention.



Vice-Chancellors' conference discussed new priorities in Agricultural Education. Sitting on the dais (From left to right) are : Dr. R. K. Malik, Director of Extension Education, CCSHAU; Dr. S. N. Puri, President, IAUA; Mr. M. K. Miglani, Vice-Chancellor, CCSHAU; Dr. Mangala Rai, Director General, ICAR & Secretary, DARE; Dr. J. C. Katyal, Deputy Director General (Education), ICAR and Dr. R. P. Singh, Executive Secretary, IAUA.



Audience at the inaugural function of the Convention.



Dignitaries after the inaugural function.



Based on his reputation as a leader in agricultural science and significant contributions in agricultural research, Dr. Mangala Rai, Director General, ICAR & Secretary, DARE was presented the scroll of honour by CCS Haryana Agricultural University, Hisar. Mr. M. K. Miglani, IAS, Vice-Chancellor is presenting the scroll.



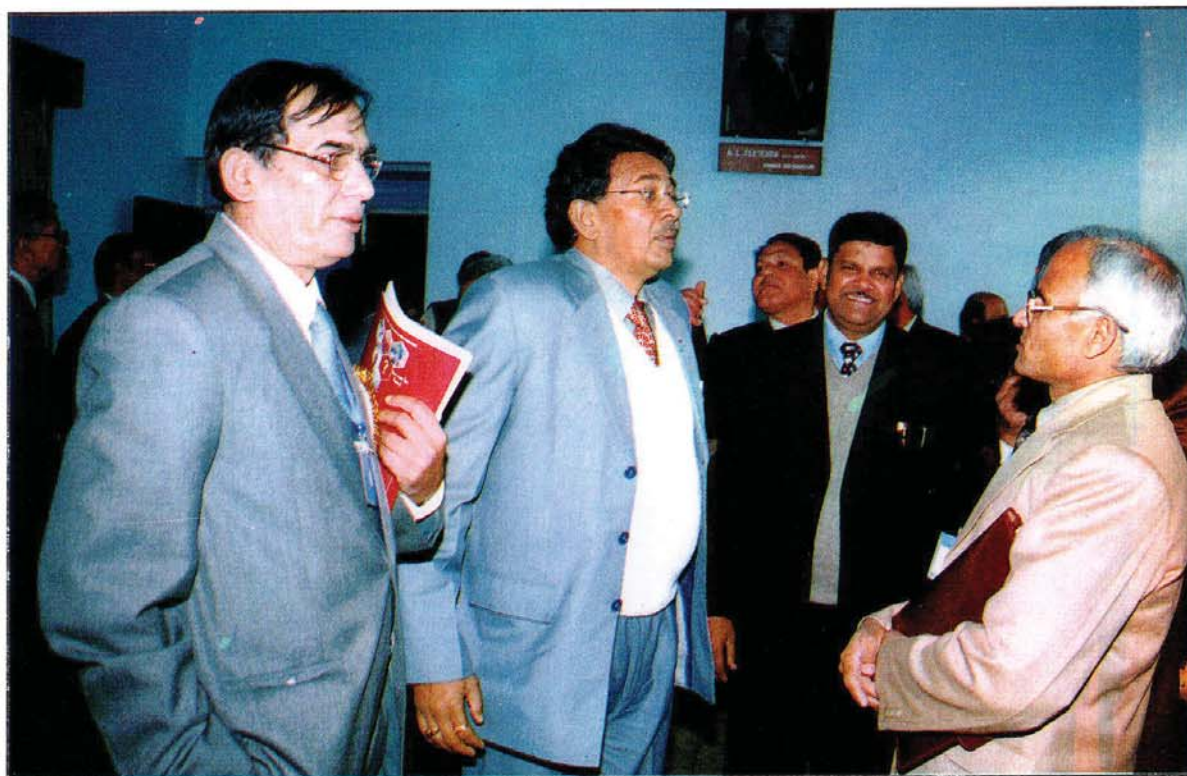
Dr. Mangala Rai, Director General, ICAR chairing Technical Session-I.



Mr. M. K. Miglani presenting memento to Dr. J. C. Katyal,
Deputy Director General (Education), ICAR.



Meeting of the Executive Committee of IAUA in progress.
The IAUA is committed in improving the quality of agricultural education
through partnership between different SAUs and the ICAR.



Delegates at the Faculty Club of CCSHAU, Hisar.



Dr. Mangala Rai, Director General, ICAR & Secretary, DARE is seen after planting a tree.

CONTENTS

S. No.	Title	Page No.
1.	Higher Agricultural Education in India — Implications of General Agreement on Trade in Services — <i>J. C. Katyal</i>	...1
2.	Quality of Agricultural Education in the Context of National Priorities and International Commitments — <i>B. S. Chundawat and G. S. Rao</i>	...15
3.	Status and Potential for the Use of Open, Distance and Technology Mediated Learning in the Kerala Agricultural University — <i>K. V. Peter and M. Mohandas</i>	...18
4.	Workload of Teachers and their Accountability in Agricultural Education — <i>N. Balaraman</i>	...26
5.	Agricultural Education Towards National and International Commitments — <i>P. L. Gautam and A. K. Agnihotri</i>	...32
6.	Quantifying the Output of Individual Teacher, Department and College — <i>V. B. Mehta and S. S. Magar</i>	...39
7.	How to Quantifying the Output of Individual Teacher, Department and then the College — <i>D. P. Singh</i>	...46
8.	Agricultural Education for Entrepreneurship, Excellence and Environmental Sustainability : Agenda for Innovation and Change — <i>Anil K. Gupta</i>	...49
9.	Broad Basing of Agricultural Education and Information Connectivity — <i>Anwar Alam and A. Q. Jhon</i>	...52
10.	Quality of Agricultural Education in the Context of National and International Commitments — <i>C. Ramasamy</i>	...58
11.	Proceedings	...70
12.	Recommendations	...77
13.	List of Participants	...79
14.	Programme	...81
15.	Committees for Arrangement	...84

HIGHER AGRICULTURAL EDUCATION IN INDIA - IMPLICATIONS OF GENERAL AGREEMENT ON TRADE IN SERVICES

J. C. Katyal¹

Status and Set up

Since independence, India has developed a strong Agricultural Education System. Establishment of State Agricultural Universities (SAUs) on the pattern of Land Grant Colleges of the United States of America was a bold policy decision in reorganizing and strengthening Agricultural Education in India. State Agricultural Universities (SAUs), Deemed to be Universities (DUs), Central Agricultural University (CAU), Central Universities (CUs) having Agricultural Faculties and Private Colleges affiliated to State Agricultural Universities and General Universities constitute Agricultural Education System. First SAU was set up in 1960 at Pant Nagar. Presently, there are 38 SAUs (including four Veterinary and Fisheries Universities), five DUs (four of these are ICAR Institutes), one CAU and three CUs having agricultural faculties. The system imparts education through 211 constituent and nine affiliated colleges in agriculture and allied subjects (Table 1). Out of these, one Agriculture College functions under the aegis of Indian Institute of Technology at Kharagpur. Also there are more than 100 Private Agricultural Colleges.

The system as a whole has an intake capacity of about 13,500 Graduates, 5,000 M. Scs. and 1500 Ph. Ds. Apart from the 12 traditional subject areas of agriculture, animal husbandry, veterinary, home science and agricultural engineering, Agricultural Education covers some specific disciplines also. These include fisheries, sericulture, forestry and agricultural marketing/cooperation, banking and management.

Indian Council of Agricultural Research (ICAR) –the apex federal autonomous body –is responsible for research, education and development extension. Its Education Division coordinates, guides and supports the activities related to agricultural education and training through provision of Strengthening and Development Grants. It also helps in admissions to fill 15% of the undergraduate and 25% of the postgraduate seats every year through a common entrance test. A well-developed Accreditation System ensures quality of education. Currently, ICAR neither provides financial support to nor conducts admissions or accreditation for Private Colleges affiliated to General Universities.

¹Deputy Director General (Education), I. C. A. R., New Delhi.

Table 1. Agricultural Education System in India

Type of university	Number of universities	Number of colleges
State Agricultural Universities	38	210*
Central Agricultural University	01	06
Deemed-to-be Universities	05	10
Central Universities having Agricultural Faculty	03	03
Indian Institute of Technology, Kharagpur	-	01
Private colleges	-	~100

* Includes 09 privately run affiliated colleges.

The contributions made by SAUs and ICAR Research Institutes, as partners of the National Agricultural Research System (NARS), are well recognized. They together gave a scientific base to Indian Agriculture. As a consequence of that country has become self-sufficient in food grains and other commodities. The Green Revolution, with its impressive social and economic impact, would not have been possible without the significant contributions made by these centres of agricultural education, research and extension.

Comfortable situation on food seems to have given rise to a general obsession and perception that sufficiency in food grain production was all that required to be accomplished by NARS. This complacency, no doubt, is fraught with serious effects, since post green revolution scenario has thrown open new challenges and problems, which necessitate to : (i) consolidate the benefits of green revolution by responding to concerns of sustainability, profitability and productivity, (ii) address the problems of poverty, malnutrition, equity and unemployment, (iii) remain sensitive to stakeholders perspective, (iv) adapt to upcoming knowledge and frontier science subjects and (v) create awareness and knowledge on emerging issues of new economic order. These new developments and challenges call for continuous capacity and competence building through reengineering education and training. In this pursuit strengthening of Agricultural Education System with appropriate financial and policy support will be necessary.

Emerging Scenario and Concerns

The human resource developed by Agricultural Education System has been instrumental in agricultural transformation in the country. However, with need for new knowledge and skills becoming more challenging than ever, Agricultural Education System is hard pressed to keep pace with the rapid technological, economic and social developments taking place globally. Henceforth, it would be required to respond to the needs of the following major emerging scenario and concerns at the local, national, regional and global levels.

- ❖ ***Need for tuning of education with job creation*** : Job opportunities in government sector would be shrinking faster. Hence, there will be a need for developing graduates/postgraduates who create their own jobs and provide jobs to others also. Currently, 43% of the graduates and 23% of postgraduates (M. Sc.) are unemployed.
- ❖ ***Poverty alleviation*** : Food will remain available in plenty but may stay inaccessible to many. Poverty alleviation will require far more attention than that in the past, since India continues to tenant the largest number of poor in the world (250 millions out of nearly 1000 millions worldwide). Harmonizing science and technological (S&T) inputs will be an inescapable imperative to nurture rural livelihoods with sustainable development of natural resources.
- ❖ ***Pressure on natural resources*** : In an effort to raise productivity from a non- stretchable area, pressure of intensive agricultural practices will mount further on natural resources. Estimates show that out of total geographical land area of 329, almost 200 million ha suffer from degradation of one or the other kind. Hence, maintaining quality and integrity of soil, water, vegetation and attaining 4% growth in agriculture (as envisaged in the National Policy on Agriculture), which is economically and socially sustainable will come in the forefront.
- ❖ ***Demand from client groups*** : Client groups including farmers and consumers would be more aware on relevance and utility of S&T findings. Their concerns would become integral part of agricultural S&T activities and programmes.
- ❖ ***Price tag on S&T output*** : With greater inflow of funds for S&T from the private sector and non-public institutions, the output is likely to bear a price tag. Besides, advice/consultancy on new innovations will not be available free. Scheme on setting up of privately owned Agri-clinics and Agri-business Centres across the length and breadth of the country is a step towards paid extension.
- ❖ ***Ecological concerns*** : Sustainability of the growth in agricultural production together with the environmental considerations would receive greater attention of S&T through education and research. Pressure from international bodies and developed countries is likely to increase with respect to sustainable development against impending loss of productivity due to desertification and climate change.
- ❖ ***Global economic order*** : Alongwith sustainable development, agriculture S&T will need to be harmonized with existing and emerging issues related to WTA and free market economies. Worldwide agriculture will become competitive price- wise and its produce acceptable quality-wise. Indian agriculture will be no exception and its objectives will have to align with stakeholders' needs, clients' perspective, peer concerns and market vibes. Greater infusion of frontier science subjects, legal aspects, good practices of trade,

ethics of IPR and GMO, and modern information and communication techniques will become more important than ever to promote efficiency, awareness, equity and competitiveness in agriculture.

- ❖ ***Value addition to agricultural produce will be necessary*** : Building buffer stocks will be good to preserve national pride and country's international status; processing for value addition of marketable surplus will be better for status; processing for value addition of marketable surplus will be better for bringing visibility and viability to contribution of agriculture. Building backward and forward linkages will open up avenues for productive, profitable and sustainable agriculture on one hand and job-led growth on the other.
- ❖ ***Lack of adequate resources with educational institutions*** : The SAUs are charged with complete integration of teaching, research and extension for the holistic societal/rural development. Most of the SAUs have not been able to achieve integration of these functions due to limited physical, financial and appropriate human resources. Comfortable food situation and concerns in other areas of human welfare (disease, malnutrition, environment) will attract a cautionary approach on raising substantially the public investments in agriculture S&T. SAUs and other public supported institutions would be required to raise their own resources for S&T.

Vision, Mission and Mandate

Hence, whether it is greater dependence on science in sustaining productivity and biosphere integrity or it is fulfilling the employment needs and supporting country's economic development and international obligations, it will be necessary to diversify course curricula of education and areas of training. In conventional terms, education and training are aimed at imparting knowledge and skill. But this will not be sufficient. Skill and knowledge will have to justify utility and relevance so that they become practice and produce impact. It is my perspective that appropriate knowledge and skill-empowered individuals will be a basic resource to build agriculture more than capital assets and natural resources.

In essence, agricultural education system will follow a utilitarian approach. It will aim at producing professional and academicians who are self-confident, self-reliant and self-competing individuals and who are not white collar job seekers. They will be required to : (i) contribute to science, which helps in sustaining productivity, alleviating poverty, unemployment, preserving integrity of environment, quality of natural resources, responding to market forces and client concerns and (ii) be professionals and who create their own jobs with appreciation of human values and dignity. With these aims in front the mission statement of Education Division of ICAR will read as follows :

"To harmonize agricultural education with excellence in science and technology output for livelihood security and sustainable development".

In pursuance of this mission, greater financial commitment for renewing Education System to meet the emerging challenges will be necessary. Currently financial health of SAUs is very precarious –in some instances not even adequate to disburse salaries in time. Strengthening education system alone may not be necessarily sufficient. Along side the need will be to create a competent faculty, build requisite infrastructure, impact internal processes and instruments of policies to reform and restructure system and organization. Education system will be mandated to introduce reforms and internal processes favouring an enabling environment for performance and accountability. The **objectives** in support of the mission statement will be as follows :

- (i) To institutionalize appropriate changes in course curricula and delivery systems to incorporate concerns and aspirations of all stakeholders (students, farming community, society and country).
- (ii) To make agricultural education better by building human resource competence and infrastructure strengthening.
- (iii) To resurrect partnerships and linkages with sectors and clients to make need assessment on developing programmes and activities and value add to public investments.
- (iv) To internalize processes on sustaining agricultural human resource performance and management.

Thrust Areas

It will, thus, be essential to introduce necessary structural changes to reflect modern realities, challenges and opportunities. It will be a must for the Agricultural Education System than ever to innovate course curricula suiting to concerns and issues relevant to real life use. During the early part of the establishment of SAUs the academic programmes were structured to produce graduates who became primarily technology agents. In the present era of specialization and development in modern sciences it is necessary that agricultural education is restructured in a manner that the graduates coming out are able to meet the challenges with determination, zeal and commitment. They must prove to be the job creators and not the job seekers. For this to happen, universities would develop and strengthen both formal degree and non-formal degree educational programmes, bring academic excellence in education relevant to future needs. Accreditation process will be pursued with vigour and purpose.

Strategies and Thrust Areas for Enhancing Relevance and Utility of Agricultural Education

Stakeholder perspective : Traditional emphasis on production of mere degree holders without concern for their relevance and utility to potential stakeholders, problems of farming and farmers and emerging sectors of economy for service and employability is obsolete. Hence, the strategy would be to rationalize content and rewrite subjects and disciplines serving the

cause of existing and emerging agricultural scenarios and need of job markets.

Course curricula revision : Moving away from the theoretical emphasis on routine subjects, strategy would be to realign course curricula with : emerging challenges (building sustainability perspective, move from mono-disciplinary bookish subjects to multidisciplinary real life subjects), building professional mindset to service other sectors of economy, backstopping country's national commitments and international obligations and strengthening extension programmes to make farming technology and market driven.

Transformation of delivery systems : With changing accent on producing professionals, strategy would be to effect change in format from teaching to learning and from passive delivery of lectures to active work on projects, interactive, case-study-based learning through multi-media tools and multi-faculty teaching structures.

Adoption of a utilitarian approach : In order to enhance relevance and utility of agricultural education for employability and to effectively address agricultural and rural development problems, it would be necessary to infuse more application than theory. Strategy would be to induct reasoning skills so that students can interpret problems and device solutions. Alongwith course curricula revision and new delivery systems the move will be to strengthen small-scale laboratory practicals with life size practice sessions by setting up model plants and linking experiential learning in public/private industrial and business houses. At the postgraduate level a selective approach of building niche area excellence in subjects in which a SAU has already acquired excellence will be pursued. Like in medical and engineering professions, lower tier education is required to be introduced to prepare para-professionals to support agricultural graduates who set up village-based agri- businesses and agri-clinics. Current success of this self-employment scheme is less than 20%.

Faculty competence : In order to make way for teaching in real life subjects and expanding room for practice and innovativeness through hands-on training, the strategy would be to build competence and capability of teaching faculty in emerging areas of science and technology and skills in vocational courses.

Infrastructure rehabilitation and refurbishing : In order to build analytical and academic brilliance the first strategy would be to strengthen and update the existing teaching (classrooms) and learning (laboratory, experimental farms and library) facilities and equipments, which are old and obsolete. The second strategy would be to provide state-of-the-art equipments for supporting first class postgraduate research and establish model plants and instructional farms for learning through end-to-end work practice. Simultaneously emphasis will be laid on forging intensive tie-ups with development departments, private industrial/business houses and NGOs for enabling students to use their facilities and expertise for practical training.

In order to introduce continuing education and training of teaching faculty and graduate

professionals, potential of distance mode of training would be integrated with the traditional methods. Strategy would be to link SAUs and other institutions with the already orbiting educational satellite (Edusat) to harness the untapped potential of this fast expanding mode of teaching and learning. Creation of e-based learning facilities would be highly useful in transfer of technology and competence building of rural people for adopting scientific farming and promoting self-employment.

Activity Roadmap –Critical Requisites and Actions

Human resource planning : Human resource planning includes needs assessment for professionals in specific subject areas, review of their training needs for sustainable performance, career advancement and redeployment. This would be achieved through modernization and development of new courses and curricula at undergraduate and postgraduate levels. In-service training programmes will be launched for field professionals, teachers and researchers to build competence and encourage mobility and contain inbreeding. Special and specific budgetary provisions are required.

Curriculum planning and reorientation : Course curricula will be revised to include relevance and utility of education through reengineering of traditional syllabus and introduction of new subjects. The focus of change will be to build professionalism in that agricultural education produces graduates who can create their own employment and do not look for public sector jobs. The skill development will induct training in all aspects of an enterprise so that students can understand field problems and formulate practicable solutions. Priority emphasis will be on supporting the needs of the self-employment scheme on Agri-business and Agri-clinics, which is envisaged to bring extension services to the doors of the farmers. Besides including subjects on entrepreneurship, courses would also be developed to meet the demands of diversified agriculture and emerging global market forces. This would call for system-wide reform in undergraduate education and support to all SAUs to undertake that. Improvements in postgraduate education will be infused through creation of Centres of Niche Area Excellence. The subject area selection for these centres will be based on existing institutional strength and strategic needs of the region. Centres of Niche Area Excellence are being seen to support development of new teaching and postgraduate research programmes and materials. Additionally, these centres would help in building competent human resource in the field of new sciences and transfer of technology.

In order to introduce lower tier education and training to develop para-professionals, SAUs and other institutions would be required to build polytechnic kind of programmes. Besides transferring pedantic knowledge and imparting practical skills in a chosen vocation, the avowed goal of lower level education would be to bring para-professionals closer to farmer and farming problems. The teaching-learning process will centre on local resources, management options, popular and alternative production systems and social capabilities and conditions.

Faculty competence : Since level of knowledge and qualifications of teachers is key to sustain quality of agricultural education, building and rebuilding of faculty competence would require a continuous updating of knowledge and skills of teachers and trainers. This initiative will be of far more strategic importance in cutting edge sciences. Additional focus of faculty development programmes will be in upcoming areas of basic and applied sciences relevant to agricultural enterprise such as biotechnology, information technology, artificial intelligence, system modeling, environmental sciences, business management, small entrepreneur development for employability of graduates and livelihood security of small farm holders. Building faculty competence will be utilized for redeployment of existing faculty in newer areas of teaching and learning. Redeployment is seen as a strategy of special interest when there is existing freeze on new recruitments. Since investment in building faculty competence is investment in the future of agricultural education, developing an HRD policy to ensure training and retraining of teaching faculty becomes necessary. Additional financial support within the domain of existing scheme of strengthening and development of agricultural education needs to be extended and committed.

Real-life practical work experience : Earlier reviews on revision of course curricula by various committees set up by the ICAR recommended that more time for practical rural or on-farm work should be devoted. The suggestions also included launch of training through production-oriented courses, periodic visits to farmers' fields and stay in rural environs, earn while-you-learn and Saturday practical sessions. These initiatives failed to build requisite confidence and competence due to lack of expert faculty to impart and guide practical training and necessary facilities and infrastructure. Therefore, to strengthen skill development in life size working situations, training in dairy and food technology, seed technology, fisheries, engineering, high-tech agriculture, etc. will be introduced. These programmes will build confidence and facilitate skill development through experiential learning. Their success will hinge upon availability of model plants, food processing and engineering workshops, etc. for which additional investments are necessary.

Engendering course curricula : Gender mainstreaming calls for women education and technological empowerment. Both hold key to rural prosperity and household nutritional security. Since proportion of girl students opting for agricultural subjects is growing every year, curricula revision and development should include specialized subjects supporting their technological and skill empowerment in market driven enterprises, biodiversity conservation and sustainable development of natural resources. Specifically, linking Home Science Education with livelihood security is more pressing than ever when lack of job opportunities is hindering sufficient admissions to fill even the already created capacity. Similar to refurbishing general agricultural education, it is also necessary to support creation of women-specific facilities for lower tier education, training and practice.

Vocational education : Small and marginal farmers, landless labourers, farmwomen and school dropouts constitute bulk of the 40 million unemployed or semi-employed work

force of the country. Their knowledge and technological empowerment is seen as a positive approach to infuse and expand opportunities for off-farm employment and to decrease dependence on agriculture as sole source of livelihood. SAUs need support to facilitate development of need-based vocational programmes (non-formal education) to cover this sector of rural community affected by unemployment. Typical introduction of vocational courses in animal husbandry, dairy technology, fisheries, horticulture, vegetables and flowers cultivation, food preservation, sericulture, maintenance and custom hiring of farm machinery and seed and nursery propagation require priority attention. High-tech agriculture including precision agriculture and organic farming are seen to offer a vast potential to create productive, profitable and stable employment in agriculture.

Higher Agricultural Education : Context WTO, GATT and GATS

Since I have been invited to speak on status of agricultural education vis-a-vis reorientation in the context of WTO particularly with reference to General Agreement on Trade in Services I will now briefly discuss the subject from that angle. After presenting that account I will look into the future of Higher Agricultural Education (HAE) in India.

Some Historical Facts

- ❖ World Trade Agreement (WTA) successor to 1947 General Agreement on Tariffs and Trade (GATT).
- ❖ The objectives of WTA : Help trade flow smoothly, freely, fairly and predictably WTO-1995-Signatories 140 countries. India was a signatory of GATT and automatically it is also a signatory of WTO.
- ❖ General Agreement on Trade in Services (GATS) : Outcomes of Uruguay Round, January 1995.
- ❖ Mandated negotiations of GATS : Commenced since 1.1.2000.
- ❖ GATS has same objectives as its counterpart in merchandise trade –the GATT.

Fundamental Principles of WTO

- ❖ Most Favoured Nation (MFN) Treatment– Every signatory country will extend to every other signatory member the same and equal treatment in a non-discriminatory manner.
- ❖ National Treatment –Imported goods and domestically produced goods will be treated alike, except for payment of customs duty at the time of import.

India's Stand on WTO

- ❖ India, within Uruguay Round, undertook for her agricultural good tariff (%) bindings at 100, 150 and 300 for primary products, processed products and edible oils.

- ❖ Certain agricultural products were bound during the previous rounds of GATT negotiations at zero or low levels of tariffs.
- ❖ For giving protection to domestic agriculture and agro-industry, especially phased removal of Qualitative Restrictions (QR) on imports, India initiated negotiations in 1996 for revision of these tariff bindings under Article XXVIII of GATT - 1994.

GATS

- ❖ GATS –Currently a “bottom up” or ascending list agreement.
- ❖ Countries must sign on to provisions for them to apply and are not bound by provisions they refuse to sign.
- ❖ Currently 40 countries have, to varying extents, agreed to open up public education services to foreign competition.

Educational Services and GATS –Coverage

- ❖ Technical and vocational education
- ❖ Training services
- ❖ Distance education
- ❖ Education for special needs
- ❖ Accreditation
- ❖ Student exchange programmes
- ❖ Professional development requirements and several other areas

As far as education is concerned GATS covers : primary education (except child-care services, all pre-school and primary education services); secondary education (general, technical and secondary education including technical and vocational services for disabled); higher education (post-secondary technical, vocational and other higher education services leading to university degree or equivalent; adult education (education for adults outside regular education system) and other education (all other education services except that related to recreational matters).

Country Commitments

Education sector is one of the least committed services covered under GATS. For example :

- ❖ Forty-four of the 144 WTO Members made commitments to education; 21 included commitments to higher education.
- ❖ Only three of the 21 countries having committed for higher education have submitted negotiating proposals.

- ❖ Congo, Lesotho, Jamaica and Sierra Leone have made full unconditional commitments in the area of higher education.

GATS -Much More than a Trade Agreement

- ❖ It covers by way of providing service internationally, through foreign direct investment (FDI) and labour mobility.
- ❖ The GATS describes four “modes of supply.”
 - (i) Cross border supply –It applies to services from the territory of one member to another member. Services via international communication media and cross border supply through distance education are covered by this mode.
 - (ii) Consumption abroad –Services supplied in the territory of one member to a consumer of another member; example –students studying abroad.
 - (iii) Commercial presence –Services provided by a supplier of one member in the territory of another member. All FDI related to services to fund foreign universities fall in this category.
 - (iv) Presence of natural persons –Services provided through temporary entry of people from one member to another. Typical example is courses provided by foreign teachers.
- ❖ The breadth of these categories explains why the GATS has been referred to simultaneously as a trade agreement, a multilateral investment agreement, and a labour mobility agreement.

Education Services and GATS -Implications

- ❖ GATS envisages an open global market place where services (education) can be traded to the highest bidder.
- ❖ GATS covers educational services of countries whose educational systems are not exclusively provided by the public sector.
- ❖ Since total public monopolies in education are rare, world’s educational systems fall under the GATS umbrella. In principle, India cannot get exemption in education from GATS because education is not necessarily free (*i.e.* some fees has to be paid at Higher Education level).

Issues Affecting Higher Education (HE) Including Higher Agricultural Education (HAE)

- ❖ India has not made specific commitments covering education under the GATS agreement.
- ❖ India’s public education system could remain off the table for the new round of negotiations. GOI would need to consult stakeholders before making commitments on

commercial education and training sector.

- ❖ Inclusion of commercial education may pose serious risk to HE. A cursory glance at state of HE shows that the distinction between public and private services is becoming less apparent.
- ❖ Most universities are now heading for commercial appendages to secure private research funding and consultancy work.
- ❖ The GATS agreement contains built-in commitments to progressively liberalize and expand the coverage of all service sectors.
- ❖ Division between “commercial” and “public” education is becoming blurred. If India makes commitments covering commercial education services, there would be mounting pressure to expand the scope of education services, further putting public education at risk. The safest way to avoid this is to make no commitments on education as a sector, whether public or commercial.

Commercialization of Education – March is on

Commercialization of education is happening at a rapid pace. During the last two years around 50 private agricultural colleges have been opened in the States of Chattisgarh and Maharashtra. Many more have been set up in the field of technical and general education. Currently the UGC guidelines have been made liberal to promote opening of deemed to be universities. For example, declaring an institution to enjoy deemed to be university status following conditions are required to be met : (i) a 10-year standing with courses recognized by the relevant academic bodies, (ii) infrastructure including buildings for administration and academics of about 4000 m² of 50 lakh worth and (iii) a corpus fund of Rs. 5 and 3 crore, respectively, in case of higher professional and general education institutions. Further, these conditions are not imposed for new institutions engaging in the emerging areas of science and technology with promise of excellence. With this kind of liberal approach, the day does not seem far away when India may opt for GATS.

GATS and Future of Higher Education in India

- ❖ The corporate sector has discovered a trillion dollar industry. It is yet to be fully explored and exploited. This is a service sector industry in the area of education as ‘service’ with a huge global market in which students, teachers and non-teaching employees constitute resources for profit making. In this industry, the students are consumers, teachers are service providers and the institutions or companies catering to education services are organizers, and teaching-learning process is no longer for the building of a nation but a business for profit making.
- ❖ Education will continue to grow, because it cultivates human mind and makes people

relevant and useful for development.

- ❖ For corporate sector, education will grow as a big service industry. Globally, current public spending exceeds one trillion US \$ (Rs.48,00,000 crores), representing cost of over 50 M teachers, 1000 M students and hundreds of thousands of institutions. Predatory and powerful IMCs are targeting public education, particularly HE, for profit making. Though predominantly a government supported service, most governments are as a consequence of neo-liberal economic reforms, withdrawing from it. Government of India through extensive privatization, commercialization and deregulation is obliquely or in a straight-way encouraging this process.
- ❖ Service sector accounts for more than 60% of production and employment in advanced industrial countries. This sector accounts for two thirds of EU economy and jobs, almost a quarter of the total export, and a half of all foreign investment flowing from EU to other parts of the world. More than one third of economic growth of the United States over the last five years has been due to service exports.
- ❖ In 1996, the United States of America provided exports of education and training services that reached a whopping cost of \$7B. Higher education was the fifth largest service exported by the US. Therefore, the pressure of US on WTO Member countries in relation to trade in education services is clearly understandable.

In the light of above aspects mentioned in detail about Higher Agricultural Education (RAE) in India in the context of WTO, initiation of dialogue with all stakeholders and holding of deliberation of intelligentsia is timely and of topical interest. Following is a brief list of discussion points :

- ✦ Whether higher agricultural education be opened to the international influence and for profit organizations? .
- ✦ What could be the areas that would need to be restricted?
- ✦ What approach the Universities, specifically SAUs and DUs, could take in the changing scenario?
- ✦ What perceptible changes one would perceive in the pattern of agricultural education in the country? What preparedness is needed on the part of SAUs, DUs and the ICAR?
- ✦ How to manage higher agricultural education in the country? What structural changes are needed?

Conclusions

Hence, reengineered Education System will depend on the following three components :

- Strengthening teaching and education capabilities through human resource development,

course curricula design and modification, delivery systems, necessary infrastructure and reforms. Influence of international agreements like WTO, GATT and GATS should form an important theme area for teaching and learning.

- Utilitarian approach so that agricultural education is useful for employment generation and relevant to country's sustainable economic development by setting up of Centres of Excellence and launching of vocational courses.
- Quality assurance by the reinvigorating Accreditation system.

QUALITY OF AGRICULTURAL EDUCATION IN THE CONTEXT OF NATIONAL PRIORITIES AND INTERNATIONAL COMMITMENTS

B. S. Chundawat¹ and G. S. Rao²

Preamble

The principal objective of education is not only development of human personality, but also development of an ideal citizen. Only those who consider themselves students throughout their life have something meaningful to convey to others. Agriculture is vital not only for our food security but also for our national security and self- respect. Import of food is equivalent to import of unemployment and poverty. Our course curriculum demands change from time to time in view of changing national and global scenario like WTO issues, patenting, new seed policies, global diversity and last but not the least farmers' rights and their plight. More than three quarters of our peasantry is either marginal or small. The impoverished farmers cannot afford to buy expensive hybrid/high-tech seed every season/year.

National Priorities

The agricultural education should address the upcoming issues without neglecting the fundamental aspects related to botany, plant breeding, agronomy, plant protection, soil science and horticulture. Our strengths lie in genetic diversity for different crops, horticultural plantation, vegetables, medicinal and aromatic plants. However, we are lagging behind in development, diversification and preservation of products. Minimizing post-harvest losses, removing pesticide residues and preventing microbial/mycotoxin contamination warrants immediate attention in view of the compulsory certification for export. Since, agriculture is location specific strategies have to be evolved and implemented at local level keeping *niche* specificity in view. Apart from acquisition of knowledge, skills and tact, inculcation and nurturing of team spirit is most vital for maintaining productivity and sustainability. There should be a deep commitment for our country, citizens, farmers and consumers, as well as for conservation of ecosystem. We have to focus upon eco-regional farming systems to evolve cost effective technologies to augment productivity with sound backing up of post-harvest technology, product diversification, value addition and by-product utilization.

¹Vice-Chancellor, S. D. Agricultural University, Sardarkrushinagar-385 506.

²Associate Research Scientist, Veterinary Faculty, S. D. Agricultural University, Sardarkrushinagar-385 506.

International Commitment

Agricultural Education sector should develop a database of requisite information on education and seek market intelligence regarding the status of agricultural education and research in developed countries to improve accreditation status of our educational institutes. To accomplish this objective, refurbishment of infrastructure should be taken up immediately and requisite funds may be earmarked exclusively for this purpose. As far as the establishment of multinational educational institutes in India, we should not raise a hue and cry but support gradual liberalization in this front such that majority of our domestic educational institutions attain capacity and competence to compete with foreign institutes. In the long run globalization would yield significantly positive results. The state agricultural universities must get prepared by recruiting/deploying super-specialized faculty, develop research oriented curriculum, collaborate for joint academic and research ventures, pooling-up and exchange of resources, with industry, networking and encourage consultancy by the faculty.

Ensuring Rural Orientation in Agricultural Education

In pursuance of the recommendations of the third Dean's Committee Report (ICAR), compulsory Rural Area Work Experience (RAWE) programme has been introduced in Under Graduate Course Curriculum for B. Sc. (Agri.) students. Based on the appraisal of the feedback obtained so far from the students as well as the rural community, need based restructuring has been made which will be followed up by triennial evaluation. Small groups of students @ 6 to 8 per batch per month per location were found to provide an ideal platform for optimum, direct and diverse personal experience by infusing enthusiasm and social awareness among students simultaneously motivating farmers. Thus, RAWE programme can be considered as one of the most dynamic and innovative tools of agricultural education in bestowing hands on exposure to rural setting.

RAWE programme not only motivates farmers but can also join line-departments viz., irrigation, sanitation and rural development in organizing field demonstrations on rain water harvesting, ground water management, prevention of soil erosion, soil and water testing, vermi-culture, bio-fertilizer application, vegetable gardening, floriculture, nursery management and energy plantation programmes for fodder/fuel. The PURA concept (Providing Urban Amenities in Rural Areas) would encourage educated youth to settle down in villages and contribute to rural development (Kalam, 2004) thereby effectively complementing existing extension activities viz., Training and Visit, Front Line Demonstrations, Variety Testing, Kisan-call Centres, Integrated Pest Management, Water Harvesting and Conservation; Krishi Melas and Veterinary Clinical Camps so as to help the farmers to help themselves.

Relevance : Employment Oriented Education

Introduction of self-employment/entrepreneurship development oriented courses for capacity building may be offered as Electives at the undergraduate level or organized as short term post-graduate diploma/certificate courses. These elective courses could be conducted by research/extension wings on the pattern of erstwhile 'Earn while you learn' projects (AICRP-ICAR). The potential areas that would fetch returns are seed dressing, packaging and marketing of fruits, vegetables and flowers, preservation and packaging of dressed meat(s) and other food products viz., breakfast cereals and ready-to-use simple inexpensive farm implements. The students can also be encouraged to take up extra-curricular courses on foreign languages (IELTS, TOEFL) and IT enabled services training like Networking, Multimedia and Mass Communication. The extension education wing can utilize the services of UG/PG students as enumerators on contractual basis. Post-graduate students can also be used in the Kisan Call Centres on hourly payment basis. Before contemplating addition of any new courses/training programme, obsolete portions of erstwhile syllabus should be deleted keeping in view the busy schedule of the students. Because they can spare only a couple of hours per day for pursuing capacity building programmes.

Technical Collaboration (Agri. Entrepreneurship)

NABARD Initiatives Group Entrepreneurship, Scheduled/Cooperative Banks/Societies, Dairy Federation, Oilseed Federation.

Conclusion

- (i) Undergraduate curriculum needs restructuring keeping in view the present scenario.
- (ii) RAWES programme could be modulated to serve as a village adoption project.
- (iii) To encourage self-employment/entrepreneurship development/capacity building *electives* be introduced at undergraduate level or short term PG diploma/certificate courses be offered.
- (iv) Refurbishing infrastructure would revitalise educational institutes and make them internationally competitive.
- (v) A Cess fund may be kept by DARE for development of infrastructure in S. A. U.S.

References

- Jain, S. K. and Jain, N. (2003). *University News* **41** (29) : 9-13.
Kalam, A. P. J. (2004). *Ibid* **42** (39) : 15-18.
Lakshmanan, S. (2004). *Ibid* **42** (23) : 7-9.
Loknathan, K. *et al.* (2004). *Ibid* **42** (52) : 81-87.
Rao, M. V. (2003). *Ibid* **41** (18) : 13-18.

STATUS AND POTENTIAL FOR THE USE OF OPEN, DISTANCE AND TECHNOLOGY MEDIATED LEARNING IN THE KERALA AGRICULTURAL UNIVERSITY

K. V. Peter¹ and M. Mohandas²

1. About KAU

The Kerala Agricultural University offers seven UG and nine PG programmes covering 43 disciplines and doctoral programmes in 23 disciplines. The UG courses are offered in 10 constituent colleges. There are 36 research campuses spread over the whole state. There are over 2000 students and 700 faculty members.

The KAU came into existence in 1972 and has an excellent track record in agricultural education. In the last four years, KAU was ranked first, in 1999-2000, 2000-01, 2002-03 and third in 2001-02 based on National JRF examination. The University also received the Sardar Patel Award for the best ICAR institution during 2003-04. The KAU also received the Accreditation of ICAR in 2004.

2. Present Status of ODL and TML in KAU

KAU has not yet accepted Open Distance Learning (ODL) either for the mainstream under-graduate/post-graduate education or for extension programmes. However, KAU made a number of strategic initiatives for the application of Information Communication Technology (ICT) in different segments, which could give the enabling environment for application of ODL and Technology Mediated Learning (TML) in KAU. The most significant IT enabled initiatives are listed below :

- (i) The Agromet Advisory services in KAU provide weather forecast alongwith appropriate crop management advisory services, which could be scaled up with linkages with ISRO-Metsat.
- (ii) The KAU Wide Area Networking is in progress. Institution level networks exist. At all major campuses ARIS network also exists.
- (iii) KAU will benefit from the ICARNet bring implemented through ERNET. The network is in proposed to network all the agriculture related academic and research institutions.

¹Vice-Chancellor, Kerala Agricultural University, Thrissur-680 656.

²Executive Director, Virtual University for Agricultural Trade.

- (iv) The Distributed Information System Centre (DISC) of the Bio-informatics initiative of the Department of Biotechnology (DBT) ICAR also exists. This is being upgraded into DIC by the Department of Bio-Technology.
- (v) KAU Central Library and the College Libraries have digitized their possessions especially doctoral theses under the NATP project and are being networked.
- (vi) KAU is included in the first phase of the Agricultural Research Documentation project jointly undertaken by NAAS and MSSRF with the collaboration of ICAR.
- (vii) The Central Training Institute (CTI) is the nodal agency for implementation of the Agri-business/Agri-clinic Training programmes in the State for the graduates in agriculture, animal husbandry, dairying, fisheries and forestry with the support of NABARD and MANAGE. The CTI is provided with Video Conferencing Facility. MANAGE is planning to make the programme online.
- (viii) KAU is collaborating with the Indian Institute of Information Technology and Management, Kerala (IIITMK) in the implementation of the cyber agricultural extension project initiated by the Department of Agriculture, GOK. KAU is actively involved in
 - (a) content generation for the weekly 25 minutes telecast in Asianet captioned "Krishi Deepam" and
 - (b) in answering the queries and questions of the farmers online.
- (ix) KAU is the principal agency for implementation of the Virtual University for Agricultural Trade (VUAT) as recommended by Prof. M. S. Swaminathan Commission. While KAU is responsible for planning, content generation and implementation, the technical solutions including portal architecture, networking and data base management, etc. are looked after by IIITMK. All commodity Boards and Export Promotion Agencies are also members of the consortium.

The Components of VUAT are :

- (a) A user-oriented data-base
- (b) A client oriented advisory and decision support system
- (c) Need based and demand driven short-term courses on selected aspects of WTO, IPR and related issues.
- (d) Need based and client oriented training programmes to specific groups of stakeholders.

All the above four activities are IT enabled services and the last two apply online learning techniques. The advisory services have three components, viz.

- (a) Meteorological information services
 - (b) Management advisory services
 - (c) Market intelligence services
- (x) KAU and VUAT are founder members of the National Alliance forged by MSSRF-Tata National Virtual Academy for Food Security and Agrarian Prosperity. The Alliance is aimed to network all the 6 lakhs villages by 15th August 2007 to empower the rural people with knowledge and skill for enabling food security and agrarian prosperity. The National Alliance for Mission 2007 : Every Village a Knowledge Centre would provide a common platform for a wide range of institutions like Universities, Government Departments like IT and Telecommunications, ICT firms, NGOs and Civil Society organizations, corporates like ITC, NASSCOM, Microsoft Foundation, Asim Premji Foundation, etc. to co-operate in the establishment of Village Knowledge Centres (VKCs) in every village to provide need based content for their empowerment. The National Alliance would provide a lot of synergy to the participating institutions through the power of partnership.
 - (xi) KAU is also making efforts to avail the virtual classroom facilities under the 'Edusat' programme.
 - (xii) KAU is planning to launch a 2 years Postgraduate Programme in Agricultural Informatics with the collaboration of IIITMK.
 - (xiii) KAU will be associating with the proposed Virtual Institute of Science, Technology and Arts (VISTA) initiated by the IIITMK. This would operate as a knowledge grid employing virtual expertise of the networked learning institutions.

3. Policy and Potential

The KAU is progressively adopting ICT for academic, research and extension activities. The present policy is to encourage wider application ICT for improving the efficiency and productivity in learning, research and extension on the one hand and to empower students, academic and the farmers on the other. The commitment of KAU is evident from its involvement in VUAT, National Alliance for Mission 2007, KISSAN, Agri-informatics, Library Digitisation, Agromet services and ARIS and ICAR net. The potential for application of ODL and TML ion KAU may be seen from the following :

(i) Potential applications of VUAT

VUAT can serve as a very powerful vehicle for agricultural extension, research and education through ODL and TML in the following ways :

1. It would serve as a very comprehensive and dynamic cyber extension system with wide outreach and access for empowering farmers and extension personnel.
2. The VUAT would also act as an extension training support system through online training programmes for extension personnel, traders, exporters, farmers and other stakeholders. This would facilitate continuous and sustainable transfer of technology and technology upgradation.
3. The dynamic and interactive portal would provide location specific – crop specific, product specific and problem specific information and advisory services to the farmers, extension personnel and other stakeholders in the fields of agriculture, animal husbandry, fisheries and agri-business.
4. It would facilitate transfer of latest information on agricultural technology, weather parameters, pests and diseases, input supply systems, crop management practices under different agro-climatic situations, agri-business and market intelligence information and act as L3 learning system for farmers.
5. It would act as a very effective system for lab to land, land to lab, land-to-land and lab-to-lab extension.
6. The interactive portal would facilitate identification of current and prospective research and extension needs and would serve as a regular and sustainable research extension interface system. The system would work instantaneously through the Focus For a/Strategy Groups and will have close linkages with research and consultancy systems.
7. The VUAT would provide comprehensive database on major crops and agricultural products including coconut, coir, spices, rubber, coffee, organic products, marine products, animal husbandry products and organic products. The economics of different farming systems would also be included.
8. It would substantially widen the outreach and access to the research findings especially the new technologies generated.
9. The VUAT would function as an effective system for continuous and concurrent feedback from farmers and other stakeholders which would enable the research organizations, commodity Boards and the Development Departments to plan

appropriate research policies and strategies for the benefit of the farming community.

10. It would also facilitate strengthening of research linkages between different research institutions, commodity boards and development departments, which would provide greater synergy in agricultural research and education through the power of partnership.

(ii) Synergy of National Alliance for Mission 2007

The National Alliance provides the platform for the mutual co-operation of technology and ODL institutions, NGOs, corporate and content generators which would create synergy through the power of partnership. KAU will certainly benefit from this partnership in a big way which will enhance her capabilities in ODL, TML and content generation.

(iii) Power of networking

The teaching institutions have internal LAN and the KAU VAN is becoming a reality. A lot of infrastructure has been built as part of ARIS networking funded by ICAR. Currently ICAR is implementing a ICARNet with Ernet connectivity. The Library networking is also in progress. The Agrimet is another facility which also can be brought to the network. Above all the DISC facility of the Department of Bio-Informatics is being restructured and strengthened. All these IT enabled facilities and networks can be further networked for maximizing the synergy and utility in application. All these could be combined into a meta-data base through networking of networks.

(iv) ODL-TML to supplement formal learning

KAU policy is to enhance the application of ICT by adopting TML as the dual mode for supplementing the formal classroom learning of UG 7 PG Courses. This would take three forms :

- (a) Well designed couple of courses on ODL-TML mode
- (b) Specific modules of a course can be put under ODL-TML mode. This can be done wherever there are difficulties in duplicating teaching efforts or in areas wherein home expertise is inadequate/poor.
- (c) Supplementing RAWES with a well-designed ODL course on field crop management/or similar areas. Similar ODL courses may be offered during Internship and in - plant training.

(v) *Well designed short certificate/diploma courses for TOT personnel, intermediaries and change agents in the emerging areas such as*

- (a) Organic farming techniques
- (b) WTO/IPR Issues
- (c) Cyber extension techniques
- (d) Quality management of agricultural/animal husbandry/fishery products
- (e) Agricultural marketing/export marketing
- (f) Agri-business management
- (g) Market-led extension

(vi) *Dual mode learning for VHSC*

Since most of the VHSC schools offering agriculture related courses lack basic information, labs and qualified staff, it would be desirable to introduce a dual mode learning system with progressive coverage of ODL/TML system of learning. KAU can act as the nodal agency in the state for planning and implementing supplementary ODL/TML for VHSC courses in agriculture and allied areas. By sharing of expertise of KAU the professional capacity of the students of VHSC can be enhanced significantly.

(vii) *Capacity building programmes for KAU graduates*

These are short period post qualification capacity building programmes which are essentially self-employment and entrepreneurship oriented courses. The existing Agri-clinics/agri-business programme run by the CTI with the support of MANAGE can be immediately put under ODL without much difficulty. Some of the suggestive areas for such short-courses are :

- (a) Agri-clinics/agri-business services
- (b) Organic farming
- (c) Nursery management
- (d) Plantations management
- (e) Landscaping
- (f) Floriculture management
- (g) Foreign trade management

- (h) Dairy management
- (i) Poultry management
- (j) Processing management
- (k) Agricultural journalism
- (l) Gender mainstreaming

(viii) Capacity building for teachers/scientists in ODL/TML

This is an essential prerequisite for sustaining the ODL/TML systems of learning. The scientists/teachers are to be adequately empowered in ODL courseware content preparation and should have expertise in developing ODL learning resources.

(ix) Capacity building for academic/research & extension managers

This is necessary for creation of an enabling environment in the beginning and for efficient management of the ODL/TML learning systems subsequently.

(x) New short-term academic programmes on ODL mode

KAU can offer certain innovative diploma courses in the beginning on ODL/TML mode which can later be transformed into full fledged PG courses. Some of the potential areas for commencing ODL courses are :

- (a) Agri-Informatics
- (b) Gender sensitization in agriculture
- (c) Ocean information management
- (d) Agro-forestry management
- (e) Foreign trade management
- (f) Marketing management
- (g) Market led extension

(xi) Online fishery information management

The National Centre for Ocean Information Service (INCOIS) located at Hyderabad provides information on the catch, sea weather, etc. which can help the fishermen not only to enhance their catches but also to save their life thanks to the accurate information on sea weather. This is one area where the KAU

will be able to offer information to fishermen and educate them through ODL facility.

(xii) *Life long learning for farmers (L3 farmers)*

This is an essential component of the ODL and the KISSAN-VUAT structures could be effectively deployed for life long learning for small holders. This assumes great significance in Kerala as 96 per cent of the farms are below 1 hectare and 98% below 2 hectares. Hence, community organizations/group endeavours are to be promoted for organizing production and marketing. Here community-learning system, through ODL becomes a very powerful tool for empowering the farmers groups.

Conclusion

There is very great potential for application of ODL and TML in KAU for offering TOT training, post qualification training, dual mode supplementary training for VHSC and for commencing short courses. Once the system accepts, ODL can be extended to offer UG and PG programmes with necessary supplementing support through conventional modes for practicals, field experiences and on the job learning.

WORKLOAD OF TEACHERS AND THEIR ACCOUNTABILITY IN AGRICULTURAL EDUCATION

N. Balaraman¹

Agricultural Institutions in India

With the setting up of the first State Agricultural University at Pantnagar on the pattern of Land Grant Colleges of the United States of America, a new chapter in the history of Agricultural education in India began in 1957. Agricultural education system in India is being presently managed by 31 State Agricultural Universities, 1 Horticultural University, 5 State Veterinary, Fisheries and Animal Science Universities, 1 Central Agricultural University, and 4 National Institutes under the umbrella of Indian Council of Agricultural Research. In all there are 11 deemed universities, 3 central universities and several academic universities providing affiliation to agriculture and allied disciplines. There are 121 agricultural colleges, 38 veterinary and animal science colleges, 22 agricultural engineering colleges, 17 home science colleges, 13 fisheries colleges, 10 forestry colleges, 14 horticultural colleges, 11 dairy science colleges, 7 colleges of basic sciences and humanities and 3 colleges/faculties on agri business management in the large family of institutions relating to agricultural research and education. A Faculty of Agriculture is functioning in Annamalai University in Tamil Nadu and a Dairy Engineering Department is established in Indian Institute of Technology, Karaghpur. There are several higher secondary schools in our country, which offer agriculture as an optional subject

Need for a Paradigm Shift

The State Agricultural Universities were established with the general mandate of undertaking education, research and extension in all branches of agricultural sciences. National Institutes under ICAR have larger mandates and functions encompassing national issues and international collaborations in research and education. The scenario in agriculture has undergone vast changes during the past five decades after independence owing to revolutionary transformations which had swept the farm front all over the country. High yielding and hybrid varieties were introduced in food crops. High producing livestock were introduced in dairy cattle, sheep, goats, pigs and poultry. Tremendous changes have taken place in the field of marine and inland fishery activities. Farm inputs were intensified and production and productivity have increased in all food commodities.

¹Vice-Chancellor, Tamil Nadu Veterinary and Animal Sciences University, Chennai-600 051.

Post-harvest measures have been introduced to handle the surplus produce. Processing, preservation, storage and packaging have emerged as new avenues of research and development. Agricultural engineering and development of farm machinery and equipment brought about major changes in farm operations. Farm mechanization has introduced new momentum to the agricultural revolution to meet the challenges of the 21st century. Genetic engineering, molecular biology and cloning have emerged as new dimensions in agriculture and animal sciences.

Explosive development in information and communication technologies has brought abundant knowledge to the doorsteps of the common man and opened up possibilities of newer approaches in teaching and extension methodologies. Correspondence, distance and continuing educational facilities got a boost through revolutionary desktop printing technologies. Interconnectivity and accessibility to internet and websites and substantial breakthroughs in library information system and agricultural research information system necessitated swift changes in the educational approaches in agriculture and allied sciences.

Semester System and Course Credits

The present day higher agricultural education system needs to be modified to bring about uniformity in structure and course curricular contents. The higher education in agriculture is dealt with at four levels, namely, Graduate, Post Graduate, Doctoral and Post Graduate Diploma Courses. It is uniformly agreed that the semester system will be followed in all these courses. The examination pattern continues to differ among the institutions, varying from entirely internal to entirely external assessments. The grading systems of evaluation also vary in descriptive and quantitative terms. A semester is supposed to run for a period of 18 to 20 weeks (110 working days including examination days as recommended by ICAR) followed by a brief semester break.

In a week with six working days, 24 credits can be offered to the maximum to handle 3 theory hours and one practical class of three hours in a day. In a professional course like Veterinary Science at Bachelor level, the Veterinary Council of India regulates the course curricula and as high as 22 to 28 credits are offered in a semester (A total credit load of 190 is prescribed by VCI, and 250 credits are offered at Madras Veterinary College in 10 semesters). At Madras Veterinary College, 35 course credits and 20 research credits are offered at M.V. Sc. level. At Ph. D. level, 25 course credits and 50 research credits are offered. The Indian Council of Agricultural Research has recommended a credit load of 35 credits at the rate of 17-18 credits per semester for post graduate programme and 8 credits per semester for two semesters (16 credits) for the doctoral programme which is yet to be adopted. ICAR has recommended a credit weightage of 15 for M.V.Sc. dissertation and 45 for Ph. D. thesis. In Madras Veterinary College, the weightage 20 credits for PG dissertation and 50 credits for Ph. D. thesis are prescribed. B. F. Sc. programme at Fisheries College,

Thoothukudi is conducted for 8 semesters with a uniform credit load of 18 credits per semester. ICAR has recommended a credit load of 160 to be evenly distributed in 8 semesters. M. F. Sc. and Ph. D. programmes in Fisheries are similar to those of Veterinary Science course credit structure. The maximum course and research credits permissible per semester are 20/21 and 12, respectively at PG/Doctoral levels.

Theory-Practical Ratio

There has been a long felt need to streamline the theory : practical ratio at various levels of higher education in agriculture. For the graduate programme, a ratio of 1:1 is found necessary, while at post graduate level, 2 : 1 is considered important in view of the fact that the student needs to master the subject concerned with adequate in-depth knowledge and advanced hands on exposure followed by the dissertation work. At the doctoral level, the theory classes need to be at the most advanced level in front line areas followed by the thesis work. For the post graduate diploma programme and in-service update courses, the theory : practical ratio needs to be 1 : 2 since more of practical orientation is the need in the field in addition to update on the latest developments in the concerned professional field.

Disciplines and their Groupings

Let us Consider Veterinary faculty as an example for purposes of grouping of the various related disciplines. There are 22 definite disciplines in the field of veterinary science (17 approved by VCI) in addition to 7 supporting disciplines and a few non-credit courses, which can be grouped as follows :

1. Anatomy, Surgery, Obstetrics and Gynaecology
2. Clinical Medicine, Physiology and Pharmacology, Toxicology and Jurisprudence
3. Parasitology, Pathology, Bacteriology, Virology and Immunology
4. Preventive Medicine, Veterinary Hygiene and Meat Science
5. Animal Nutrition, Feed Technology and Fodder Production
6. Animal Breeding, Animal Reproduction, Genetics and Cyto Genetics
7. Animal Production Management
8. Livestock Products Management
9. Poultry Science
10. Dairy Science

11. Animal Biotechnology, Biophysics, Biochemistry and Molecular Biology
12. Livestock Economics, Livestock Extension and Animal Husbandry Statistics
13. Livestock Business Management
14. Wild Life Sciences
15. Environment and Co-curricular Disciplines

The various courses offered at the post graduate level are divided into four groups (credit load per course given in parentheses)

1. Core courses of the concerned subject (3+1-2+1)
2. Optional cafeteria courses of the concerned subject (3+1-1+1)
3. Complementary courses from allied subjects (3+1-2+1)
4. Supporting courses from basic subjects such as computer applications, statistics, research methodologies and research/laboratory techniques (2+1-1+1)

Each of these courses can be good modules to offer training courses as well to cater to specific needs of professional and non-professional clientele groups.

For the PG Diploma courses, the programme runs for 2 semesters, with credit loads of 18 credits in each and a theory : practical ratio of 1 : 2.

Apportioning of Time and Credit Load

The overall time spent on education, research, extension and institutional building and other general activities by a teacher in Veterinary Faculty is 50 : 25 : 15 : 10, respectively. The time spent on teaching graduate level theory and practical courses is divided among the Assistant Professors and the Senior Faculty at the ratio of 60 : 40. At the Post Graduate and Doctoral levels, 60% of the time is occupied by the Senior Faculty and 40% by the Junior Faculty. The sharing of the teaching load is both in respect of theory and practical classes. The various courses offered at the post graduate level are generally shared by faculty members from at least 3 disciplines each consisting of about 10 members. The credit load per semester per faculty member in each discipline on an average can be estimated as given below :

B. V. Sc. credits 12×2 groups = 24

M. V. Sc. credits Core courses – 12 + Optional courses – 6 = 18

Ph. D. credits 8

Total credits 50

Credits handled per faculty – $50/10 = 5$

This is in addition to the credit weightage for dissertation/thesis at 10 credits for each faculty per student per semester. Additional teaching load for conducting PG Diploma courses in concerned disciplines.

Considering the fact that the faculty members need to execute their respective research projects, schemes, field trials, extension as an educational activity, training courses and institutional building/supporting activities, the load is quite adequate if not heavy particularly when the faculty strength is less than 10 in a discipline. At the post graduate and doctoral levels, the teacher : student ratio is about 3 : 1 as compared to graduate programme where the ratio is about 10 - 15 : 1.

Evaluation and Accountability

A system of evaluation of teachers needs to be developed to ensure accountability. Teaching methodologies employed and teaching aids put into use must be given due weightage. Use of modern electronic, audiovisual equipment undoubtedly enhance the value of teaching. Seminar halls and lecture rooms have been considerably modernized in most of the institutions due to development and one-time catch up grants provided by the ICAR. Preparation of referral reading material and books, booklets, bulletins and practical manuals has to be taken into account. Efforts made in improvising the course contents and revision of syllabi are also essential features. Specialized courses and training programmes organized and coaching classes conducted for improvement of weak students can be additional criteria. At the post graduate/doctoral levels, the quality of dissertations and theses evaluated in terms of papers published, technologies developed, awards and recognitions received can be good indicators. Feed back from the students on the performance of teachers is an essential component of evaluation. This will also bring about changes in the approach to teaching as per students' perceptions. Overall credit load handled by the teachers, theory and practical classes handled, seminars organized and assignments for the students also need to be taken into account. Uptake of students for employment at governmental and private organizations and the performance level of students in competitive examinations and scholarships also reflect upon the quality of academic standards set by the Institution as a whole.

It is experienced that education, research and extension should go hand in hand since they strengthen each other bring about excellence and relevance in performance. Adequate recognition for good performers in the form of awards and fast track career advancement is essential to maintaining quality of teaching. A quantification procedure and objective evaluation methodology through peer groups should be introduced to recognize teachers of right attitude and calibre. A large scale HRD programme can be launched to keep up the quality of education

and updating of knowledge and skill levels of the teachers so that the outgoing students will have pride of passing out of their institutions of repute and take upon their tasks in their jobs with adequate confidence and competence.

AGRICULTURAL EDUCATION TOWARDS NATIONAL AND INTERNATIONAL COMMITMENTS

P. L. Gautam¹ and A. K. Agnihotri²

The system of agricultural education in India needs a complete overhauling and restructuring in view of transformation of agriculture from subsistence to surplus stage and now to the commercial stage. Compared to 1950 productivity level, the farm-sector experienced productivity gains of nearly 3.3 times in food grains, 1.6 times in fruits, 2.1 times in vegetables, 5.6 times in aquaculture, 1.8 times in milk and 4.8 times in egg production (Mangala Rai, 2004). However, there is no place for complacency on farm front, especially when we have to meet the challenges of making India hunger free by the end of Xth Plan i. e. year 2007. It demands an additional annual production of 2.6 million tons of rice, 2.2 million tons of wheat, 1.6 million tons of pulses, 4.2 million tons of fruits, 2.5 million tons of vegetables, 7.8 million tons of milk and 0.6 million tons of fish. The challenge becomes more serious due to physical limitation of agricultural land (around 51 per cent of total geographical area has already brought under cultivation), 65 per cent of total area sown is rainfed, emerging unprecedented degradation of land and ground water resources coupled with continuous fall in total factor productivity. The remedy lies in efficiency centric improvement in productivity through technology-led growth in the areas of food grains, pulses, oilseeds, cash crops, horticultural crops, agro-forestry, animal husbandry, poultry and aquaculture. Development of a road map is necessary to attain food, nutrition, employment, ecological and equity concerns of the nation which are still elusive to 25 per cent of the total population. Besides national concerns, the international commitments before Indian agriculture is on account of globalization and trade related issues under WTO domain. In this changed scenario, the following issues flagged for the present convention are not only relevant but also appropriate and timely to reshape agriculture education imparted under NARS (ICAR + SAUs).

1. Quality of agricultural education in global perspective
2. New strategies for demand of agricultural graduates
3. General perspective of financial problems vis-à-vis generation of more revenue resources, and
4. Statutory provisions for monitoring and implementing plans for technical infrastructure

¹Vice-Chancellor, GBPUA&T, Pantnagar-263 145, Uttarakhand.

²Coordinator & Professor (Ag. Econ.), GBPUA&T, Pantnagar-263 145, Uttarakhand.

for agricultural education in India

I. Quality of Agricultural Education in Global Perspective

Education is perceived as a means to build human resources capacity in regards to assimilation of knowledge and its application, abilities to overcome constraints and accept opportunities. Education augments an individual's quality of life. Accordingly, periodic changes in the curriculum of graduate/post-graduate courses are considered essential to keep pace with leading professional institutions. During last decade or so the world has turned into global village and movement of trained manpower has become an integral part of our social fabric. This fact brings our profession to a position which requires prompt standardization of education, thus bringing it at par with that of developed countries.

The premier SAUs and National Research Institutes with their vast potential of research facilities could become unique base for training of competent scientists and development of technologies. The need of the hour is to restore the intended dignity to our agricultural universities as centers of higher learning. There exists a gap of infra-structural facilities between the research institutes and the State Agricultural Universities. Therefore, the linkages between academic institutions on the one hand and national institutes, laboratories and public sector enterprises on the other, have to be strengthened. This can be done in following ways :

- Enhancement of mobility of scientific personnel between education and research organizations
- Development of joint research projects, and
- Investment of a threshold percentage of budget from the public and private sector in education

Today education is increasingly being seen as a marketable commodity, which has an import and export value. The developed nations have already taken a lead in the educational market. Once India makes commitments for trade in higher education under WTO policy regime and allows market access, the commercial mode of education will further be strengthened. This will create new openings for agricultural education in India especially in respect of the students who may come from the Middle East and African countries. India shall take the lead on behalf of the developing countries by using WTO as the forum and a world-class education sector as the weapon to demand its due share in the colossal education market. The task is attainable through :

- Collaborative educational programmes
- Setting up of educational campuses abroad

- Admitting foreign and NRI students

The quality of education is an important measure of productivity and prosperity of a nation. Social, political and economic changes and reforms are possible only through quality education. It is the responsibility of the education system to revamp the educational programmes to three principal areas of learning, viz. values and qualities, skills and knowledge. It will require total quality management. For ensuring institution based management quality, vision, mission and core values have to be clearly defined. Besides, the employment oriented quality agricultural education can be implanted in NARS through :

1. Introduction of entrepreneurial education. The students must be exposed to modern tools and techniques of protected cultivation, precision farming, hi-tech horticulture, biotechnology, organic farming, IPM, INM, etc. and profitable agricultural enterprises like mushroom, apiculture, sericulture, value added post-harvest technologies, etc.
2. Development of quality control mechanism through strengthening of accreditation system
3. Development of foreign education market access and their efficient management
4. Transforming class rooms, laboratories, experimental sites, library, hostels and university counseling and information systems into state of art centres
5. Development of strong linkage between SAUs and agro-industries and tuning present course curricula in market driven mode

II. New Strategies for Demand of Agricultural Graduates

In many developing countries, including India, rural youth find difficulty in obtaining a basic education of the same quality as urban youth, and hence have difficulty in gaining entrance to institutes of higher education. This in turn means fewer agricultural students with an in-depth understanding of rural life. This situation is unlikely to change as long as admission to SAUs is based solely on academic qualifications, which place rural young people in direct competition with better-schooled urban youth. The result is a significant waste of human resources, since rural youth possess unique aptitudes and qualities for understanding and working in the rural sector and are well suited for technical work in agriculture.

In some cases, the urban origin of agricultural students is now so dominant that it is becoming difficult to teach them about agriculture without special, often expensive, educational efforts. The result is that urban-based graduates, with little practical knowledge of rural background and agricultural production, are working as extension agents and agricultural advisers.

The increasing number of students with urban backgrounds has led some institutions to look for ways to ensure that these students gain a practical understanding of the realities of

rural and farm life. One way is early integration of students in rural life through practical training before final admission and a series of practical training periods throughout the programme of study. Agricultural universities and colleges need to take into consideration during admission the willingness of students to follow an agricultural career and their ability to adapt to work in rural areas.

Policies and strategies need to be developed that ensure representation of rural youth in higher agricultural education. Bright but economically disadvantaged students need access to education. Quotas or community representation schemes are one means to ensure opportunities for rural youth. Another option is community or regional scholarships for capable youth interested in studying agriculture. Intellectually capable rural youth lacking academic skills may require an adjustment period and a make-up year to meet standards. Similarly, urban youth may need to obtain agricultural competencies through mandatory internships and systematic exposure to rural life. This model of educating students for agriculture and allied studies will strengthen their competencies for employment within their domain.

Agricultural colleges and universities need to determine their unique functions and the special attributes that they can offer students and the agricultural community. They will need to do a better job of communicating these attributes if they expect to remain financially sustainable, given current economic constraints. Moreover, agricultural institutions need to do a better job of carrying through with their unique ability to solve the agricultural problems of the communities they serve. A holistic approach to teaching agricultural production through a multi-disciplinary systems perspective will increase the utility of both scientific and local knowledge.

The curricula of agricultural colleges and universities in India need to adjust to the current and future employment needs of graduates. The emphasis in curricular revisions should be on process skills of problem solving and on skill sets that are transferable to a diverse employment sector. New options for programs of study should be based on enabling students to meet the expectations of agricultural employers, and increasingly the employment needs of the private sector.

III. General Perspective of Financial Problems Vis-À-Vis Generation of More Revenue Resources

The agricultural education is overwhelmed with the problems of shortage of funds. This is due to sole dependency on funds received as aids and grants from the government. The increases in amounts of these grants and aids have not shown a significant increase in real terms. As various pay commissions set by government have hiked the salaries and wages (as was required also due to interplay of various economic factors) more than 90 per cent plus budget is consumed under this head. Government also has limited amount of funds, therefore, too much cannot be expected from it. This leads to shortage of funds for other academic activities like production of study material, having state of the art instructional

technologies, upgradation of laboratories, access to modern communication tools, research contingencies, etc., consequently leading to deterioration of quality of education.

To tackle above problem a change or shift in policy will be required. The policy should be to make agriculture education self-sustaining in place of being dependent on grants/aids from government agencies. It needs to be funded only till expected gestation period is over. But why this has not happened so far. For this let us look into the approaches under which agricultural academic programmes are developed. They are basically of following two types :

1. Competency driven : This means that the courses were developed on the basis of existing competency of the faculty/institution and not based on the need of the time. Till date, the agricultural education programmes were designed under competency based approach. Arranging or generating resources for such programmes is a Herculean task. They are generally sustained by the funding of government agencies.

2. Demand driven : This means the programme is designed based on the need and the capacity. As these programmes are developed on need of the some stakeholder, therefore, generating resources for such programmes is easier as compared to the competency driven programmes. The era is of demand driven programmes.

There is going to continue simultaneous demand for both the approaches but focus should be more on the second approach. Crux of the problem lies in how to generate resources to turn existing academic programmes into self-sustaining programmes. The solution lies in ensuing steps :

- Identification of market/need driven academic programmes.
- Identification of the sector(s) that needs such programmes.
- Establishing a partnership relationship with such sectors.
- Asking them to come forward and fund the programmes.
- Fee of the programme should be on cost plus basis (At the same time few seats may be reserved at nominal fee for the meritorious and needy students).
- Few seats may be reserved for payment category and NRI sponsored candidates.
- Few seats may be reserved for industry sponsored candidates
- Revitalization and rejuvenation of university farm, research sites, zonal research and extension stations through much needed investments so that these can function as lighthouses and can generate additional opportunities for income and employment for the parent organization

IV. Statutory Provisions for Monitoring and Implementing Plans for Technical Infrastructure for Agricultural Education in India

There is long felt need of equipping Agricultural Education system with latest technology infrastructures. The technologies like Integrated Communication Technology (ICT), Geographical Information System (GIS) and Remote Sensing (RS) are urgently required for improving quality of agricultural education. There is need to expand and enhance the use of computer by the students and staff. This can be achieved by establishing a Planning and Technical Cell in all state agricultural Universities. A technology training and support team is required to be created at the central level in each University. Policy and procedure will have to be designed that will establish criteria for hardware replacement, redistributing and nurturing software skills required to use GIS, image processing, remote sensing, GPS and computer-linked equipments. These are must and may find a place in the curricula of state Agricultural Universities.

Conclusions

Precisely, the quality education in agricultural sector can be ensured through general consensus among SAUs and Deemed Universities on identification of academic quality parameters, setting of norms for each parameter as per national needs in global perspective and establishment of planning and technical cell in each institution for concurrent and *ex-poste* monitoring, appraisal and assessment. The course curricula for agricultural graduate are required to be job-oriented which can be developed through establishment of strong public-private interface. The financial health of agricultural institutes in the country can be improved through minimization of wasteful expenditures via appropriate austerity measures and enhancing the revenue generating capacities value added activities through attracting the private investments.

References

- Mangala Rai (2004). Address : Orient Agricultural Education towards Future Needs and Opportunities. Proceeding of the 28th Annual Convention of Indian Agricultural Universities Association, Sher-e-Kashmir University of Agricultural Sciences & Technology (Kashmir), Srinagar, J & K, June-29-30, 2004.
- Murty, G. R. K. and Rajshekar, N. (2004-05). Globalization and Challenges to Higher Education. *University News* **42** (52) : 15-18.
- Varghese, M. A. (2004-05). Strategies of Financing of Higher Education in India. *University News* **42** (52) : 11-14

ANNEXURE

I. Strong Linkage between SAUs and Agro-industry Sector

II. New Strategies for Demand of Agricultural Graduates

- Genesis of a New Education System Model, based upon more admission to rural youth through quotas/community representation schemes and to urban youth via pre-admission rural orientation capsules
- Need to highlight unique functions and special attributes of SAUs
- Holistic approach to teach agricultural production
- Tuning of course curricula to current and future employment needs and expectations of the employing agencies
- Paradigm shift from discipline oriented to multi-disciplinary mode

III. General Perspective of Financial Problems

- Sole dependency on state exchequer, in real terms allocation has reduced over time
- Major share of SAUs budget is used for salary and wages
- To make agricultural education self-sustaining, it has to shift from competency driven to demand driven mode
- Identification of market driven programmes
- Identification of stakeholders
- Partnership development with interested agencies in private sector
- Cost plus basis realization of programme fees
- Reservation of seats for payment category
- Revitalization and rejuvenation of university farms, experimental sites, zonal stations, KVKs through enhanced investment

IV. Statutory Provision for Monitoring & Implementation

- Establishment of ICT, GIS and RS centres in each SAU
- Creation of Planning and Technical Cell
- Empowerment of National Accreditation Systems to maintain quality standards in agricultural education in various SAUs and Deemed Universities

V. Conclusions

QUANTIFYING THE OUTPUT OF INDIVIDUAL TEACHER, DEPARTMENT AND COLLEGE

V. B. Mehta¹ and S. S. Magar²

Higher education in Agricultural Science has acquired a significant position in the nation building programme. It has played a pivotal role in generating scientifically trained manpower for rapid development of Agriculture and allied sectors. A strong network of National Education System involving large number of Agril. universities and colleges is the main strength of the country. In the recent past, there has been a phenomenal growth in the number of agricultural colleges and also in number of students entering into these colleges. Thus, higher education in Agriculture has become a movement in India.

Need for Accountability

The higher education in Agril. Universities, however seems to be plagued with a number of problems during the recent years. Dwindling of standards at various levels of educational process has emerged as a major concern which needs immediate remedial measures to save from further emancipation. One of the several remedies suggested, lies in introducing the concept of accountability.

Concept of Accountability

Establishing the principle of accountability is one of the guiding considerations of the New Education Policy. It is not a totally new concept. There have been accountability movements in the countries like United States, Netherlands, Sweden, Britain, France, etc. In India too, there has been rules and regulations, statutes and ordinances, conventions and practices for duties and responsibilities, but these measures are inadequate. The need has arisen to go beyond these provisions to inculcate a sense of responsibility. There has to be a strict enforcement of these provisions making the agril. universities socially accountable.

The accountability is to be considered in its totality at the administrative level, academic level and also at financial level. The accountability has to be at the individual level and also at the institutional level. The administrators, the members of faculty and also the students need to be brought under the concept of accountability at the individual level. So also the departments, the colleges and ultimately the universities need to be brought under the sphere of accountability. The faculty member is accountable to the

¹Director of Instruction, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli.

²Vice-Chancellor, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli.

department, the department to the college, the college to the university and the university as a whole to the public. Thus, each and every component of higher education has to have accountability.

Academic Accountability

The academic responsibility is the major responsibility of institutions of higher education. It is the very purpose for which these institutions have been established. To impart accumulated knowledge to the younger generation through teaching and evaluation, to generate new knowledge through research and to extend the benefits of academic work to the people at large in the service of humanity are the several aspects of academic endeavour. There has been a hierarchy among academicians as in administration. There are Assistant Professors, Associate Professors, Professors and Heads of Departments. Academic freedom needs to be provided to academicians. The freedom will be accompanied by accountability. It is also necessary to clearly spell out the duties and responsibilities at each level and then accountability needs to be introduced at the individual level. In academic accountability quantifying the output of individual teacher, department and college is of prime importance as these are central pivots in any educational system. Hence, there is an urgent need to determine the elements for quantifying the output of individual teacher, department and college.

I. Teacher

Teacher is the foundation stone in any educational system. Imparting knowledge and evaluation of students' performance are the primary responsibilities of teachers. Several attempts have been made in fixing these responsibilities by deciding quantum of work in terms of contact hour, assessment of teachers by themselves, by their superiors and even by the students. However, despite this no system of evaluation is found to be full-proof. Particularly, in the change circumstances there is a need to devise a comprehensive system for quantifying the output of the individual teacher. There is a need to evolve norms and measures for assessing performance of teachers in their functions of teaching, research and extension.

II. Department

Department is the second important pillar in the educational system. The department is the basic and most important unit for development of the particular subject and hence, quantification of output of Department also needs to be considered. The following aspects deserve particular mention.

- *Competence of faculty* : The competence of the faculty of the Department is the basic requirement for measuring the output of Department.
- *Infrastructure* : Infrastructure, both in terms of laboratories and farms.

- *Courses* : The number of courses being taught by the Department.
- *Postgraduate students* : The number of postgraduate students produced by the Department.
- *Research projects* : The number of research projects handled by the Department.
- *Revenue generation* : The efforts made by the Department in revenue generation.
- *Publications* : The number of publications made by Department.
- *Recommendations* : The number of recommendations made by Department.
- Organization of Seminar, Symposium and Workshop.
- *Extension work* : The participation of the Department in extension activities like farmers rallies, publications, supply of planting material, etc.

III. College

College is the sum total of all the teachers, departments and students and hence, it is the crown of the education system. The college is responsible to the society and hence quantification of output of College is of greater advantage to the society. The following points need to be considered for assessing the college.

- *Faculty* : The competence of Faculty of College.
- *Departments* : The number and competence of Departments of College.
- *Classrooms* : Classrooms are the real seats of teaching and learning and hence, the number and condition of the classrooms need to be evaluated.
- *Hostels* : The College is responsible for providing residential accommodation to the students and hence, the number of hostels and their condition is important.
- *Gymkhana for overall development of the students* : The gymkhana and play grounds.
- *Students council* : The working of the Students Council.
- *Extra-curricular activities* : Participation of students and staff in extra-curricular activities.
- *NCC, NSS, work experience activities* : The NCC, NSS and Rural Agricultural, Horticultural/Forestry Experience programme need to be assessed.
- *Publications* : The number and quality of publications by the faculty.
- *Research* : The research project including ad-hoc project handled by the faculty and Department.

- *Recommendations* : Both in terms of research and number of passout students from the College.
- *Organization of Seminars/Symposia* : Organization of Seminars, Symposia, farmers' rallies by College.
- *Performance of students* : The performance of the ex-students of the College at the regional, national and international level needs to be considered.

System Needs Improvement

Every organization needs to ensure right kind of people, at right places, at right time to achieve its objectives. It is, therefore, necessary to give recognition to those who are genuine and conscientious of their responsibilities. Recognition may be with providing opportunities of accelerated promotions or rewards. It is equally necessary to produce disincentives for indifferent and in some cases unscrupulous teachers showing repeated poor performance. Therefore, there is a need to adopt a suitable format for performance appraisal of teachers that encompasses the entire range of functions and permits differentiation based on quantified weights.

Presently confidential reports are used to assess the performance of an individual. A few dimensions such as industriousness, technical ability, aptitude, character, integrity, initiative, drive are assessed. Traditionally they are used to decide the eligibility for placement in higher grades, promotions and grant of advanced increments. Occasionally they are used for awards and special assignments. A large number of teachers do take keen interest in all the activities conducive to the welfare of the student community. They also exert for updating their knowledge and projecting an image of their institution. Some teachers show excellent performance in administrative and managerial assignments too. However, present format of writing confidential reports being common to various cadres does not cover the full spectrum of performance of academic staff nor provides quantitative measure.

Performance Appraisal

It is an assessment of individual's inherent strengths, weaknesses, aptitudes, attitudes, interests, personal characteristics as reflected in his or her work areas of responsibilities to provide opportunities to develop morale and attitudes to overcome threats.

Why Performance Appraisal?

Transparency is an essential ingredient for effective educational management. It indicates straight forwardness, stands for clear visibility, shows openness in thoughts and deeds. It is free from affection or conspiracy. Therefore, a transparent system of performance appraisal is an inescapable activity. A comprehensive system with focus on development and career advancement of teacher will contribute to the qualitative improvement of teaching profession.

The system will also motivate him or her to shoulder higher responsibilities to meet challenges of his/her job. In addition it will serve following objectives :

- (a) Identifying, sharpening, developing and using the potential of a teacher.
- (b) Providing inputs to the system of rewards, remuneration, promotions, placement, assigning special responsibilities.
- (c) Identifying individuals with high potentials and merits so as to utilize their capabilities to achieve goal/mission of the institution.
- (d) Diagnosing weaknesses of individuals to assist the institution in planning short/long term training programs for teachers.
- (e) Helping an individual to know how her/she is shaping and to overcoming weaknesses and improving strengths.
- (f) Assisting an individual particularly the young teacher for his/her career planning.
- (g) Creating culture of openness and mutual trust to strengthen superior subordinate relationship.
- (h) Toning up more effective communication skills.

Conclusion

Thus, it is obvious that there is need to add new dimensions to quantifying the output of individual teacher, department and college, several issues need to be considered. The making system can be a subject of debate, but can be sorted out through discussion, and meetings of the faculty.

Proforma for Performance Appraisal

The proforma for performance appraisal should include the information on following points : Academic performance of teachers.

1. Engaging lectures/practicals

- Workload as per norms vis-à-vis actual work done.
- Attendance of students
- Performance of results
- Class room planning and control
- Laboratory instruction
- Quality and standard of evaluation
- Curriculum/learning resources development
- Innovative teaching techniques

2. Co-curricular activities

- Member of academic bodies like BOS
- Organization of Students' Welfare activities
- Personality development of students
- Study tours/NSC/NCC/RAWE
- Maintaining students discipline
- Resource person/students counseling
- Consultancy/Resources generation
- Examiner/Expert for interview

3. Academic administration

- Purchase and maintenance of equipment/material
- Conduct of examinations/gathering/admissions
- Canteen/Co-operative stores/Hostel

- Organization and help in various functions like convocation, seminars, visits of VIPs, etc.

4. Research

- Independent research
- PG/Ph. D. students research
- Department research
- Research projects
- Research consultancy/Report
- Membership of professional bodies
- Research recommendations
- Patents
- Participation in workshop/seminars, etc.

5. Publication

- Journal – National/International
- Books
- Monographs

6. Extension work

- Extension activities
- Mass communication

7. Awards won for the contribution

HOW TO QUANTIFYING THE OUTPUT OF INDIVIDUAL TEACHER, DEPARTMENT AND THEN THE COLLEGE

D. P. Singh¹

Preamble

Teaching is one major aspect of academic life, and it is the input from the personal scholarship and research expertise of the staff that give university teaching its special flavour. Teaching's major components are content, communication and feed back. Teaching programmes must be allowed sufficient flexibility to accept injection of new information, opinion or analysis so that the excitement felt by the teacher for the subject can be brought to the students. Nonetheless there must be a transparent structure underlying the teaching programmes, the modules of which they are composed and the teaching, learning and assessment methods employed, so that the staff, current students and prospective students are all clear as to what is expected of them. Thus, it is very clear that the role of teachers is no longer limited to the narrow sphere of classrooms. On the contrary, a teacher plays a multidimensional role and in the true sense as the academic leader of the society.

- Tutor
- Researcher
- Investigator
- Social performer
- Value generator
- Pioneer in promotion of new concepts

Quality Evaluation

Academic evaluation is an educational exercise to assess and evaluate the performance of teachers and to have a pragmatic view about what is the present status of academic standards. This exercise can help in measuring the true performance and contributions of every teacher on a regular basis as well as to guide him about the areas where further improvement is needed. The ultimate purpose of academic evaluation is to bring improvement in the performance through techniques of motivation and control. This will help the educational planners, Heads of the Institutions, policy makers as well as the teachers to understand the strengths and weakness of the existing educational system. This will also help in various ways to have a rational performance appraisal of the teacher on :

- regular teaching and educational advancement
- career advancement

¹Vice-Chancellor, Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur.

- professional excellence
- enhancing quality standards
- socially useful and productive research
- value generation
- new vistas of knowledge
- social and extension services

Objectives

- to establish a goal oriented performance appraisal system in educational institutions
- to remove bias, prejudices and subjectivism in the method of performance evaluation
- to bring out a high level of transparency in the academic education
- to introduce an invisible but effective mechanism of educational control
- to motivate teachers to contribute extensively for improvement of educational standards and development of academic culture
- to create a suitable structure of evaluation that can lead in the development of a transparent, objective and positive way of evaluation of performance for establishing a suitable reward-incentive system

Methods of Evaluation

- Self assessment/report
- Classroom observation
- Structured interview
- Instructional rating survey
- Test or appraisal of student achievement
- Content analysis of instructional materials
- Review of classroom records
- Evaluation of teachers' performance by students after each semester/academic session

Qualitative Attributes of Individual Teacher

- Reliability
- Intelligence
- Resourcefulness/creativity
- Cooperativeness
- Refinement
- Drive

- Objectivity
- Buoyancy

Full Time Equivalency (FTE) Involvement

● **Advising**

1. Advising students on programmes of study
2. Sponsoring or advising students' groups
3. Chairing Masters or doctoral supervisory committees
4. Serving on masters or doctoral supervisory committees

● **Teaching**

1. Teaching regular course offerings
2. Developing course materials
3. Developing replicable systems of instructions

● **Faculty service**

1. Serving on departmental, college of university committees
2. Serving on the faculty senate administration and management
3. Directing or managing an administrative unit
4. Managing programmes or projects

● **Ranking**

1. Adhoc projects in hand
2. Individual teachers evaluation based on teaching load, research projects, extension activities
3. Research paper publication/awards/Books
4. Students counselling

● **College level monitoring**

Monthly Reports (Proforma based)

● **Statutory bodies for monitoring at university level**

1. Academic Council
2. Administrative Council
3. PG Council
4. Research Council
5. Extension Council

AGRICULTURAL EDUCATION FOR ENTREPRENEURSHIP, EXCELLENCE AND ENVIRONMENTAL SUSTAINABILITY : AGENDA FOR INNOVATION AND CHANGE

Anil K. Gupta¹

Having been a product of Agricultural University, I understand and sympathize with the leaders of the universities about the problems they face. However, let us accept that the standards that were set decades ago can indeed be surpassed if only we would challenge the students to bring out the best in them. My one line summary of the problem is that we are not challenging the future leaders of our discipline strongly enough. Is it because rise in their expectations will create a stress on us or is it that we have learnt to be helpless?

I remember in this very university in early 70s, five heads of the departments, and scores of M. Sc. and Ph. D. students will not only attend a one credit course seminar, but also grill the student hard. There was no way a student could be under prepared. Likewise, the assignments would not only be graded but also shared so that quality benchmarks were created through peer appreciation and acknowledgement. There were teachers who used out of date notes but such teachers were few. Majority of the teachers not only updated their syllabus but also created enough pressure on the students to be on the edge. However, the fact is that there was a wide range of commitment among students as well as faculty but the modal values were reasonably high. Coming from an Institute where we get students from various agricultural universities, I do not think that standards of the top quality students are any different from what these were decades ago. If anything, the students are better read. But commitment has certainly become more fluid.

I wish to focus on certain practical steps that can revitalize the educational system and institutionalize pursuit of excellence, social commitment and entrepreneurship.

Education for Entrepreneurship

The fact that most universities do not have short, medium and long term programme for entrepreneurship indicates how much out of touch we are with the realities of our society. This inadequacy must be overcome urgently and existing undergraduate programmes for agriculture and other disciplines must incorporate content for business development, market research and financial management as optional stream. Every student must have a chance to

¹K. L. Chair Professor of Entrepreneurship, Indian Institute of Management, Vastrapur, Ahmedabad - 380 015, Gujarat.

<http://www.iimahd.ernet.in/~anil/> ; <http://www.sristi.org>

<http://www.gian.org> ; <http://www.nifindia.org> ; www.Indiainnovates.com

take one of the three streams, entrepreneurial, extension and research and development. The extension may include work with NGOs, international agencies and cooperatives.

Education for Sustainability

In a study of postgraduate thesis from two dozen colleges and universities in five disciplines in 1984, I had asked a question, "Whether we were building the skills that would be needed in 2004?" For instance, in agronomy, three-fourth of the thesis were on fertilizer and 90 per cent of these dealt with chemical fertilizer. Only four per cent theses dealt with conjunctive use of organic and chemical fertilizer. Similarly, the thesis which looked at the problem of crop, livestock, tree and tool interactions were rare. Inter-disciplinary research was almost conspicuous by absence. A student from agricultural college could not take courses in veterinary, animal science, agricultural engineering or home science college. The situation might not have changed a great deal.

Exchange Programme

We need to develop exchange programme among agricultural and other universities so that students could take courses not only within the campus but also across the campus within India and outside the country for a term or two. IIMA has such exchange programme with 36 international universities in 21 countries. Why couldn't similar arrangements be developed in agricultural universities? Internationalisation of agricultural education and research is long overdue. We need to increase the quota for international students on priority so that the cosmopolitan outlook of the campus improves the educational environment also.

Education for Emerging Markets

Every student of agriculture knows that when economy grows and incomes increase, the proportion of processed food in the consumption basket increases. How many universities have full-fledged food processing departments and educational programmes? Why should there be such a lag in the need in the market place and the responsiveness of the agricultural universities? The germplasm in our national, regional and state level gene banks has not been characterized for food and agro processing purposes. There is a tremendous opportunity waiting to be tapped and educational reforms are urgently needed. Likewise, programmes in ICT applications in agriculture are offered at Gandhinagar or other ICT institutions but seldom in agricultural universities. This is something where partnership with ICT companies could be an easy option for making up the inadequacy without much extra investment or even time delay. What is required is an openness of mind and concern for the emerging opportunities for our students not just in India but internationally.

Education for Professional Farmers

Given the increase in knowledge intensity of agriculture, the earlier trend of young people leaving agriculture to old people is changing in at least some parts of the country.

However, agricultural universities offer little to these returnee graduates or other such professionals who want to pursue part time farming. The folk high schools of Denmark inspired Gandhiji to set up Vidhyapiths in Gujarat. Perhaps we need a mission of agricultural university leaders to go around the world, study the systems of education for full time or part time farmers and develop a niche here.

Education for Executives

The executive development programmes are also missing from the radar of agricultural universities. These programmes could not only generate revenue but also make the faculty more focused in their research and teaching because the feedback from these programmes would be immediate and precise.

Education for Voluntary Sector

There has been an upsurge of voluntary organizations in the last two decades funded locally as well as internationally. Do we teach courses on management of non-profit sector?

Education for Human Values and Ethical Conduct

It is true that values cannot be taught and ethics cannot be inducted. And yet, many leading institutions around the world realize that the ethical compass needs recalibration. Issue is not to deal with right, the challenge is to learn deal with wrong.

Reforms in Educational Process

Even after teaching for 24 years at IIMA, I still have to prove myself in every class every year. The feedback of the students collected by the students goes to everybody in the Institute and one knows where one stands. Even otherwise, a teacher always knows whether a class went off well or not. Do we want to be accountable to the students? Should pressure from the peers influence whether or not I should teach a course? If feedback is consistently unsatisfactory, are there any implications? These are difficult questions but answers are simple. If we want quality, we listen to those for whom we work. What is the role alumni have to play in building capacity of the educational institutions? How many distinguished alumni have been invited from different disciplines in various colleges to organize workshops or take classes so far? If not, doesn't it provide answer enough about what is the root of the problem?

There are many other areas where reforms are needed and urgently so. Educational system has to keep pace with changing realities not just in India but also internationally. The exposure to issues in IPR, agricultural health interface, disaster management, etc., needs considerable attention. The innovations at the farmers level have remained ignored to a very great extent. There are not many research programmes building upon the genius at the grassroots. How many such innovators have been invited to the classroom in various universities in the last decade or so?

I am sure if the questions that I have raised seem pertinent, the answers will not be difficult to find. The problem is that many of you may not agree with the relevance of these questions. To that extent, we have a dialogue to pursue.

BROAD BASING OF AGRICULTURAL EDUCATION AND INFORMATION CONNECTIVITY

Anwar Alam¹ and A. Q. Jhon²

Abstract

Majority of the people draw their livelihoods from agriculture and its various associated enterprises. Therefore, agricultural education should be broad based encompassing sustainable development and skill oriented training which should be incorporated for the welfare of our village people scattered in rural settlements and thereby gender imbalances and empowerment issues will be addressed in the right perspective. With the passage of time lot and many more agricultural technologies have evolved and impact of globalisation suggests that better agricultural education and training have altogether become essential for achieving rural economic competitiveness.

The frontier sciences are to be identified such as biotechnology, remote sensing, pre- and post-harvest technologies, energy saving technology for environmental protection through national research system are to be encouraged. As agriculture is increasingly becoming knowledge driven, its upgradation with its orientation towards, uniformity in overall educational standards, women empowerment, user-orientation, vocationalisation and promotion of excellence will be the hallmark of the quality agricultural education together with information and communication technologies which have impacted all walks of life. Mobile technologies have changed the whole concept of communication. Therefore, the most critical element for communication is its connectivity on this front a lot needs to be done. Here, opportunities at our disposal are enormous and there is a strong need to take a holistic look at strategic planning to use the available resources which will widen livelihood base of our rural people.

More than half of the world's population, and more than 70 per cent of the world's poor are to be found in our rural areas where hunger, illiteracy and low school achievement(s) seem to be common. Since 70% of the people draw sustenance from agriculture and allied activities, agricultural education for a large number of people in our country's rural areas is crucial for achieving sustainable development. Increasingly agriculture is going to be precise, databased requiring knowledge and skills on the part

¹Vice-Chancellor, Sher-e-Kashmir University of Agricultural Sciences & Technology of Kashmir, Shalimar, Srinagar - 191 121, India.

²Director Resident Instruction, Sher-e-Kashmir University of Agricultural Sciences & Technology of Kashmir, Shalimar, Srinagar - 191 121, India.

of the farmers. Privatization and globalisation have made education expensive which make the task of educating rural masses difficult. Strategies need to be evolved to educate the target groups i.e. children, youth and adults, giving priority to removal of gender imbalances. Socio-economic complexity makes it a challenging task. To address it there is urgent need to look at the issues of agriculture and those who derive sustenance from agriculture and give a paradigm shift in agricultural education as education and training are prime movers of agricultural development.

Why Agriculture?

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 of India. Agriculture, therefore, is and will continue to be central to all strategies and priorities for planned socio-economic development of the country.

Over a period of time, agriculture has become a relatively unrewarding profession owing to so many factors. This situation is likely to be exacerbated further in the wake of integration of agricultural trade in the global system, unless quality agricultural education is offered. Agriculture has become commercialised and uses inputs that commercial and increasingly becoming scare and expensive. In spite of great strides in industrial and service sectors, new jobs and employment opportunities have to come from agricultural sector for sustenance of the rural people.

Quality Agricultural Education for Whom?

Rapidly changing technologies and increasing globalisation suggest that better agricultural education and side-by-side training have become essential for sustainable livelihoods and rural economic competitiveness.

For many years, the approach followed by policy makers and education specialists has been to focus on practical and occupational agricultural skill training provided mainly at the secondary and tertiary levels. Yet, in an environment increasingly shaped by non-farming activities, and in a policy context dominated by the poverty reduction agenda, agricultural education requires a holistic approach going beyond the narrow boundaries of the traditional agricultural education instead to be framed in the context of national priorities and addressing commitments which are made at the international forums (Zipp, 1994). Earlier agriculture involved activities seed to seed. To meet developmental objectives in changing scenario and livelihood issues one is required to deal production till consumption. Rural India has to transfer on itself from mere producer of raw materials to producer-cum-primary processor. Therefore, education has to widen its scope including post-harvest technology, processing and value addition.

What are Immediate National Priorities?

The quality of agricultural education should seek to actualise the vast untapped potentialities and priorities, which are :

- ★ Rural infrastructure/communication connectivity to support faster agricultural development,
- ★ On-farm post-harvest technology and value addition promotion,
- ★ The growth of agri-business and entrepreneurship,
- ★ Income generating activities and employment generation in rural areas,
- ★ To secure a fair standard of living for the farmers and agricultural workers and their families assuring health giving food, proper housing, water supply and sanitation, education and healthcare, essential modern amenities.
- ★ Discouraging migration to urban areas in search of jobs and amenities and consequently face the challenges arising out dislocation and become victim of urban maladies.

A quality of agricultural education should provide well-groomed human resource that can develop and promote technically sound, economically viable, environmentally non-degrading, and socially acceptable produce and products, a way of life which is self sustaining on long basis.

Enhancing Food Security through Agricultural Education

Food security is essential inspite of current thrust on niche agriculture. Food security is achieved through food production and distribution that is within the reach of the people. A good food is one that is nutritive, balanced with adequate carbohydrates, fats, vitamins, minerals, dietary fibres. Food security is to be realized. Here, food security involves four major considerations, namely, (i) availability, (ii) stability, (iii) accessibility, and (iv) affordability. Regardless of whether food supplies are scarce or abundant, it is essential that people know how best to use available food resources to acquire and consume a variety of safe and good quality foods.

Application of frontier sciences like bio-technology, remote sensing technologies, pre- and post-harvest technologies, energy saving technologies, technology for environmental protection through national research system as well as proprietary research will be encouraged. Agriculture is becoming increasingly knowledge driven, knowledge is efficiently dissipated through information technology, through data bases, data warehousing, websites and portals which should form part of modern agricultural education. The endeavour should be to build a well-organised, efficient and result-oriented agricultural education system in order to introduce

technological changes in Indian agriculture. The upgradation of agricultural education with its orientation towards uniformity in overall education standards, women empowerment, user-orientation, vocationalisation and promotion of excellence will be the hallmark of the quality agricultural education.

About 60% of agriculture is rainfed which is extremely vulnerable to vagaries of nature. In order to reduce risk in agriculture and impart greater resilience to Indian agriculture against droughts, floods, efforts are to be made through quality agricultural education which manifests through research and extension in tackling drought and flood and achieving respectable productivity under rainfed conditions. For this purpose, contingency agriculture planning, development of drought and flood resistant crop varieties, watershed development programmes, drought prone areas and desert development programmes and rural infrastructure development should receive due coverage during formal education.

Asia and Today's Agriculture

Agriculture continues to be the occupation and way of life for more than half of Asian population even today. It is noteworthy to say that 63% of Asia's total population derives its livelihood from agriculture. According to FAO, Asia has 73% of world's farming households and 80% of world's small farmers (Riggs, 2003) and 79% agricultural labour of the world resides in Asia. Most of the Asian countries have majority of their population living in rural areas, some of them having 80% or above as rural population e.g. Nepal and Bangladesh, whose prime source of livelihood remains agriculture. Asian agriculture had been on traditional lines till the first waves of Green Revolution in late 60s particularly in India, Pakistan and Nepal.

The production and productivity of agriculture have shown very good trends over the last 50 years. In India the compounded annual rate of growth in agriculture has been over 2.5% per annum since 1951, as compared with less than 0.5% per annum in preceding 40 years (CMIE, 1997). The growth has, however, not been equal neither over the time (the years and decades) nor over space (the length and breadth of the country, irrigated and dryland geography), also not across the crops. The growth has been very good in the decades of 60 and 70s, not so good in 50s and 80s. It has been excellent in some areas – primarily assured irrigated geography, but not very good in rainfed areas. There has been a good progress in terms of creating agricultural research and education infrastructure in almost all Asian countries. The Councils of Agriculture Research have contributed very significantly in terms of developing new varieties in many crops and thereby improving the productivity and production in major crops. This however, has been primarily in public sector and hence the private participation in agriculture research and education has been very limited in input and post-harvest and processing sectors the private sector has played very important role in last few decades.

IT Connectivity in Asia

Right now, we are living in information age. The revolution in information and communication technology has impacted all walks of life. The telephones, the mobile phones, computers and most importantly the Internet have changed the whole concept of communication. Internet today is not just another means of communication. Those who use Internet regularly know that Internet is POWER. It gives a user not only all kinds of information, but also enables him to do things one could not even dream of till recently. Internet gives to its users so much competitive advantage that those without access, are facing significant disadvantages. In other words, access to the Internet can enable people in all kinds of ways including providing access to education, removing barriers of distance and remoteness, and enabling one to get all kinds of information and to close business deals (Odumbe *et al.*, 2003). But at the same time, lack of Internet access would put a person or organisation or even the sector – agriculture for example at a tremendous disadvantage. Therefore, unless steps are taken to provide Telecom and Inter access widely in rural areas, one would certainly face problems of differences between countries who have provided widespread access and those who have not.

The most critical element for communication is connectivity. On this front a lot needs to be done particularly in Asia. The access to Telephones and Internet is very poor in major Asian countries. Barring Japan, Singapore and China, the telephone access in Asian region is less than 10%. The connectivity in rural areas is still poorer. In Asian countries like Bangladesh and Nepal there is an average of 1 to 1.5 telephone connection for 100 persons, whereas in the developed countries like Sweden, Denmark and Japan the average number of telephones for 100 persons is 153, 146 and 117, respectively (Human Development Report, 2003). The Internet connectivity also shows similar trends. Hence, the telecom infrastructure is a very important item, which requires priority in providing information and connectivity to the rural areas.

Global Agricultural Scenario

Agriculture came for the first time under the GAAT/WTO discipline in the Uruguay Round when the Agreement on Agriculture (AOA) was negotiated in 1994.

The International Food Policy Research Institute has projected that the 'food gap' (the difference between demand and production of food) in the developing countries may more than double in the coming 25 years.

Here, the context of the agreement GATT/WTO can be understood by looking at the Ministerial Declaration at Punta Del Este launching the Uruguay Round.

"There was an urgent need to bring more discipline and predictability to world agricultural trade by correcting and preventing restrictions and distortions including those related to structural surpluses so as to reduce the uncertainty, imbalance and instability in world agriculture..."

This is the harbinger of an evolution, a dawn of new hopes and aspirations. It is not that situation is so bleak and there is no hope of improvement. In fact, there have been some very significant efforts of making quality of agricultural education more receptive and in tune with national priorities and international commitments.

Conclusion

Agricultural education and associated research and extension are harbinger of change. Opportunities at our disposal are enormous and there is a strong need to take a holistic look at strategic planning to use the available resources, the huge infrastructure of agricultural research and educational institutions and availability of high quality agriculture graduates. To cite an example here, the training of agriculture graduates to set up Agri-clinic and Agri-business centres in various parts of the country is another scheme which has caught up the imagination of unemployed agriculture graduates which can transform job seekers into job providers. Also, availability of appropriate communication technology, well trained ICT literate manpower and of course highly receptive and information hungry rural sector offer ample opportunities. All we need to do so is, to put all our efforts in a framework that will provide much valued quality agricultural education both in the context of national priorities and international commitments. We need to make agricultural education relevant to current needs. A process needs to be set in motion that transforms rural Indian from mere producer of raw material to producer-cum-primary processor which will widen livelihood base of the rural people.

References

- Anonymous, January 2001. A development monthly Journal, Yojana 45 : page 5-11.
- Anonymous, January 2004. A development monthly Journal, Yojana 48 : page 31.
- CMIE, 1997. A review of CMIE report.
- Odumbe, H. H., Hafkin Nancy, Wesseler Gesa and Boto Isolina 2003. Gender and Agriculture in the Information Society/ISNAR Briefing. Paper 55. International Agricultural Research (ISNAR), The Hague, The Netherlands.
- Riggs, M. 2003. WAICENT for augmenting IT Application in Agriculture. Paper Presented at the Regional Workshop-South Asia, New Delhi (May 6-8, 2003).
- Zipp, W. 1994. Improving the transfer and use of agricultural education and information-A guide to Information Technology. World Bank Discussion paper 247.

QUALITY OF AGRICULTURAL EDUCATION IN THE CONTEXT OF NATIONAL AND INTERNATIONAL COMMITMENTS

C. Ramasamy¹

Introduction

Agricultural Education in its broadest sense covers all human endeavours in acquisition, transmission and adsorption of knowledge of the better means and understanding the processes, which lead to the scientific farming. The agricultural education in India has an orientation towards traditional and improved way of crop production with very little attention paid to value addition in terms of storage, cold storage, transportation and processing. Similarly, market research into demand projections, exploring markets and export potential are important considerations which are currently weak for choice of production technologies as well as establishing backward and forward linkages to make commercially viable from the farmers as well as the industries point of views. The agricultural education has been focused within the paradigm of transfer of technology from the scientist to extension officer to farmer. The emphasis has been given on acquiring knowledge, awareness creation and dissemination of technologies through extension and communication techniques, with a weak effort at skill upgradation. There has been very little effort to create a cadre of agricultural professionals to provide technical and professional services such as diagnostic services for plant and soil health, farm management services or technical entrepreneurial skills. Postgraduate research programmes need a re-look from the current status of undertaking academic research activities towards field oriented problems.

Development of Agricultural Education in India

Before independence, there were only 17 agricultural colleges, three veterinary colleges and one agricultural engineering college in India. The quality of agricultural education with the exception of a few institutions remained extremely poor. Newly established agricultural colleges were affiliated to existing general universities. Research and extension programmes were the functions of the State Department of Agriculture/Animal Husbandry and did not involve the colleges. In 1948, University Education Commission appointed by the Government of India recognized the need for agricultural education and recommended a system of rural universities. A Joint Indo-American Team constituted in 1955 to study the problem recommended a rural university similar to Land Grant Colleges would be an effective solution of the problem of Indian Agricultural Education. This foundation led to the formation of five U. S. land grant

¹Vice-Chancellor, Tamil Nadu Agricultural University, Coimbatore-641 003, India.

universities to increase the cooperation and coordination in agricultural research and education. Second joint Indo-American Team on Agricultural Education, Research and Extension was formed in 1958 to frame specific proposals for the Third Five Year Plan which recommended the establishment of State Agricultural Universities in each state with the assistance of state government. In 1960, the Government of India appointed a committee headed by Dr. Ralph W. Cumming, Field Director of Rockefeller Foundation in India to advise the State Governments on the legislation for the establishment of agricultural universities. Based on the recommendations of the committee, Indian Council of Agricultural Research developed a Model Act in 1966 which could be adopted with such changes as were deemed necessary by the newly establishing agricultural universities. The Education Commission recommended the establishment of at least one agricultural university in each state. The agricultural universities established during 1960-65 made a remarkable impact on agricultural production during 1966-68 the early years of the green revolution.

ICAR Role in Agricultural Education

The ICAR was intended to undertake, aid, promote and co-ordinate agricultural education in the country. In 1966, the ICAR was reorganized giving it the role in relation to agricultural education as of the UGC in the case of general education. ICAR has established various research centres in order to meet the agricultural research and education needs of the country. It is actively pursuing human resource development in the field of agricultural sciences by setting up numerous agricultural universities spanning the entire country. A full fledged Division of Agricultural Education under the Deputy Director General (Education) was established in the council to provide necessary leadership and support to accelerate the pace of development of agricultural universities. A total of 29 agricultural universities have been established in the different parts of the country, including a Central Agricultural University for the north-eastern hills. In addition the Indian Agricultural Research Institute, New Delhi, the Indian Veterinary Research Institute, Izatnagar (Bareilly), the National Dairy Research Institute, Karnal and the Central Institute of Fisheries Education, Bombay have the status of deemed universities. A World Bank assisted project on the Agricultural Human Resource Development (AHRD) has been launched to improve the educational system in agriculture and meet its future challenges. In its initial stage the participating states are Andhra Pradesh, Haryana and Tamil Nadu involving the agricultural universities of these states. During the five years of the project period, agricultural education was uplifted by establishment of accreditation board, syllabus reform, faculty quality improvement, upgrading and modernization of the laboratory facilities, farms, libraries, hostels, communication systems and other ancillary facilities.

Focus on Agricultural Education

Paroda (1999) opined that human resource development is quite vital for effective

productive output both from agricultural research and education point of view. Academically strong manpower with proper awareness of the ground realities of agricultural sector and higher degree of motivation would ensure qualitative change in our research and extension programmes. Besides, newer skills would be required to compete internationally in various fields of agricultural sciences. The strength of agricultural research and education system largely depends on recruiting and maintaining a cadre of well-trained and highly motivated scientists and teachers through appropriate manpower planning and development. The creation of a mere physical infrastructure does not necessarily lead to productive research or education unless it is manned by a team of highly motivated scientists and teachers striving for excellence. Therefore, effective human resource development efforts are vital for ensuring productive output from agriculture. Efforts need to be made to attune agricultural education curriculum not only to meet the present needs but also future demands so that we have a first rate manpower with capabilities of delivering goods.

The skill development for equipping young graduates for greater participation in agri-business activities may be an essential component of agricultural education programmes. Training of students in the principles of ecology, gender and social equity, economics, and employment generation should receive attention. This can be effectively achieved by uniformity in educational standards and user orientation to agricultural education. There should be a shift from an information-based curriculum to a skill-based problem solving curriculum in our educational system. Promotion of excellence in frontier areas of newer sciences like biotechnology, information technology, geographic information system, etc. needs to be encouraged to meet the future challenges effectively.

Present Status of Agricultural Education in India

The agricultural education system in the country offers degree programmes in 11 specific disciplines, *viz.* agriculture, veterinary science, agricultural engineering, forestry, home science, dairy technology, fisheries, sericulture, marketing, banking and co-operation, horticulture and food science in more than 55 fields of specialization. Currently the SAUs have 22,500 sanctioned scientific staff position in 161 colleges with an undergraduate and postgraduate admission capacity of 11000 and 6000 students, respectively, and a total enrolment of about 44,500 students including private colleges (Kannaiyan *et al.*, 1999). The current scenario in India is that there is dramatic reduction in the rate of absorption of agricultural graduates in Government services which is noticed in almost all the States. This situation has given a signal that the students need to have knowledge and learn skills for the private sector as well as equip themselves for self-employment. As student admission in agricultural education is very much related to employment opportunities, a continuous assessment is quite important on market needs for the purpose of developing agricultural curricula.

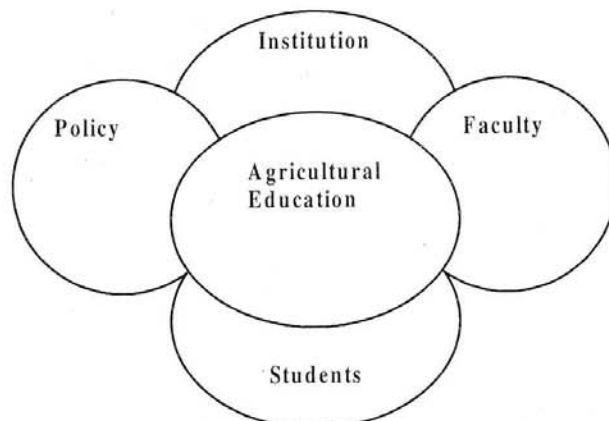
With India reaching out in a competitive market for agricultural produces with others, the higher agricultural education should play a vital and crucial role. India has an edge over other countries in managing production cost substantially lower than the industrialized countries, but at the cost of largely on quality, particularly when quality consciousness among the buying community of India and the world over supercedes the price consideration. This is directly linked to the manpower competence and quality. The present educational system produces graduates with best knowledge of science, but with neither skills nor the attitude. Thus, at international level, India and other developing countries face an unequal competition in a globally competitive labour market. It is imperative that our education is more skill oriented besides satisfying the current market demand with high degree of capability to handle modern day management system with quality assurance as a primary goal. This is essential to enable the agriculture sector to harness and use the resources and other inputs efficiently to convert the dimension of comparative advantage to competitive advantage through quality improvement and cost minimization.

Quality of Agricultural Education in the Context of Globalization

Of late, there has been a widespread consensus that quality of graduates in various disciplines of agricultural sciences does not match with the changing needs. Hence, there is an urgent need for the State Agricultural Universities (SAUs) to give attention for upgrading the quality and standards of higher agricultural education. Academic inbreeding is considered a major problem in most of the SAUs. Curricula and teaching methods are to be modified. Physical facilities, equipments and teaching aids have to be modernized and competency of teachers needs to be improved especially in the context of globalizing India's agriculture. This requires agricultural education to encompass business connotation with sound technology base and emphasis on Natural Resource Management to ensure sustainability with inbuilt environmental concerns. In order to achieve a quality education, the present system of agricultural education comprising the following components, namely, faculty, students, learning environment and the learning content to be reoriented and modified, to meet the imperatives of globalisation. The stakeholders and their interaction are presented below :

All the stakeholders are interlinked with each other and play a major role in achieving quality in agricultural education. Policy makers need to consider the views of all the other stakeholders for developing the need-based education and providing financial assistance. Institution responsibilities lie in providing conducive environment both for teachers and students for enhancing the learning process. As far as faculty is concerned, besides their technical expertise, they should have involvement for the improvement of agricultural education as a whole and developing the students to face the challenging agricultural scenario. The students

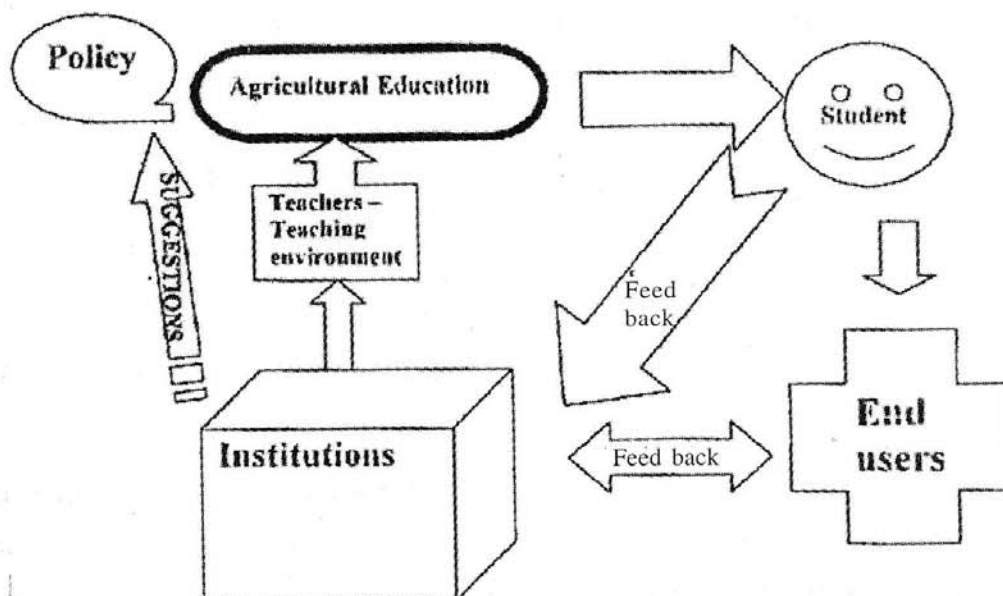
Stakeholders of Agricultural Education



also should have aptitude towards the agricultural field and have desire to work for the rural upliftment. The agricultural education will be viable and productive when there is effective interaction and feed back between them as detailed in the diagram below :

There should be agricultural re-orientation in educational and research programmes to meet the challenges of sustainable agriculture and food security. Such a restructuring will involve training of students in the principles of ecology, gender and social equity, economics and employment generation. Farm graduates should be well-versed in the science and art of sustainable agriculture and agribusiness, so as to take to farming and agribusiness as viable

Stakeholder interaction in Agricultural Education



economic enterprise. This clearly states that their major goal is to equip men and women scholars to take to a career of self employment. For this purpose, they should achieve computer, patent and trade literacy, and also become sensitive to socio-economic conditions. The committee recommended the measures for quality agricultural education.

Role of Policy Makers

Policy makers should consider the need of the society and guide the institutions for implementing the effective education with sufficient budget provision. There is a greater need for more budget allocation towards the dynamic agricultural education. Educational planning should be arrived with the consultations with the Vice-Chancellors/Directors of the institutions. A separate body for periodical assessment of institution by means of accreditation is also very much essential and crucial for improving quality of education

Accreditation of Higher Agricultural Education in India

Accreditation is a process of assuring an acceptable institutional quality and it is a tool for improving educational standards. The process intends to improve and sustain the quality and relevance of education, and it is for improving transferability and marketability of students nationally and internationally. The ICAR plans, undertakes, aids, promotes and co-ordinates higher agricultural education in India. It has been promoting the quality of agricultural education in the country since 1950s, through Education Panel (1952), Standing Committee (1965) and Norms and Accreditation Committee (1974). To further improve and sustain the quality of higher agricultural education, an Accreditation Board was established in 1996 with well-defined objectives and functions.

Role of Institutions

To be in tune with globalization, in the new model of higher education system, the institution will ensure : (1) the delivery system cost effective, (2) curriculum relevant and need based, (3) institutions more autonomous and (4) universities to design and operate a system of management required to fulfill their missions by meeting bulk of the financial outlay. Consequently the role and support of the Government will come down over a period of time. A system of cooperative teaching will help utilize the available qualities employed human resources in the larger institutions on contractual basis for teaching specialized subjects among themselves and also supporting resource institutions.

1. Institutional linkages : The process of globalisation of professional agricultural education necessitates institutional linkages and networking among the agriculture schools across the world. The following are the advantages of such net working :

- Sharing literature, technologies and techniques to avoid crisis of resources.
- Continuous exchange of faculties and students.
- Constitution of Association of Agricultural Universities/schools at global level which would serve as a platform to facilitate regular meetings to discuss problems and prospects.
- Such an association can conduct various activities like updating of courses, joint research

and consultancy projects, training and development programmes, seminar, symposia and workshops relating to agricultural education in a more integrated world.

Future challenges can be met only by building partnerships between different organizations such as the following :

- Among SAUs and between SAUs and women's and Rural Universities.
- Between SAUs General Universities, CSIR, ICAR and other research Institutions.
- Between SAUs and the Private and Public Sector Industries.
- Between agricultural scientists and farm families.
- Between SAUs and ICAR Institutes and International Agricultural Research Centres, particularly those belonging to the CGIAR system.

Such partnerships will require suitable memoranda of understanding (MOUs). In research, this will involve reorientation so as to promote field research jointly with farm families. Such participatory research is essential for integrating ecological and social sustainability in new technologies. Sustainable agriculture requires location-specific technologies. This can be achieved by adopting double and triple helix models of partnership.

The linkages of agricultural universities with industries are very weak at present. Both must work together in order to cater to the needs of one another locally, nationally and internationally. This can be done by :

- Involving industry representatives in the process of design of curricula and syllabi, which is currently underway in Tamil Nadu.
- Exchange of people (teachers on deputation for industry placement for research and development and industry people for training).
- Funding of teaching and research activities by industries.
- Summer placement of students in-industries in a more formal way.
- Emphasis on campus visits by industries for getting a feel of university programmes and for campus recruitment of graduates.

2. Cross country accreditation : The Government need to put in enough diplomatic efforts to get cross country accreditation of courses and institutions to ensure quality of the education and to enable the graduates to compete globally.

3. Optional subjects : Of the total four year programme in undergraduate, the training

during the first three years can deal with general topics in science and nutrition. The final year should provide a number of options such as management of biodiversity and biotechnology, seed technology, food technology, renewable energy management, information technology and GIS mapping. Students may be given option to choose courses for their interest. This could be achieved by establishing cafeteria courses.

4. Entrepreneurial approach : Agricultural education should aim at helping farm graduates to undertake agricultural intensification, diversification and value addition in an integrated manner. The graduates should become job creators and not remain job seekers. They should be well-versed in the creation of more skilled on-farm and non-farm livelihoods. This would require an End-to-End Technology Mission Approach, linking production and post-harvest technologies in a mutually reinforcing manner. Agricultural Universities should set up Agricultural Technology Parks. This will establish economic viability of new technologies. These Parks could promote technology incubation and dissemination. Such Parks will help to enhance self-confidence of farm graduates and stimulate them to take a career of self-employment.

5. International competence : Farm graduates should be given a course on international agriculture and the implications of the World Trade Agreement. Trade Related Intellectual Property Rights (TRIPS) and the global conventions on climate, biodiversity and desertification. As mentioned earlier, they should become literate both in computer technology and in patents. Computer, patent and trade literacy should be a must for every farm graduate. They should be helped to gain confidence and competence in capturing global markets in farm commodities. All SAUs should be connected to NICNET and Internet, so that farm graduates are exposed to the power and speed of modern information technology. Post-graduate students should be adequately equipped to get international jobs in agriculture. In this connection, we welcome the initiative of the Indian Agricultural Research Institute in organizing a course on International Agriculture.

6. User oriented agricultural education : There has to be a clear understanding of the purpose of agricultural education. Firstly, some farm graduates may go for post-graduate education and take to a career of research and education. Secondly, some may go to work in State Departments of Agriculture as Extension Officers. Many may opt for taking to practical farming and agribusiness enterprises. Even at the time of admission there has to be a clear understanding of the purpose for which a student has joined the SAU. This will help to equip the candidate in his/her chosen area of profession. For example, those who are going to live in urban areas should have a 1-year training programme on urban agriculture and horticulture, so that they can help to promote an urban greenbelt movement.

7. Non-degree training programmes : There is a need for a variety of non-degree training programmes based on both market preferences and the need for upgrading skills of in-

service candidates, drawn from educational and research institutions and extension departments. Non-degree training programmes offer opportunities for life-long education. They should also be open to the staff of non-governmental organizations.

8. Computer-aided extension and instruction : Precision farming is knowledge intensive. Modern information technology provides opportunities for reaching the unreached in terms of information and technological empowerment. Distance learning methodology can also be more widely used and linked with interactive modes of extension at the field level.

9. Education for sustainable agriculture : It is necessary to develop reliable quantitative indicators which could be utilized to measure the environmental impact of new technologies, and to measure and monitor the long-term sustainability of the use of natural resources like soil and water. It is also necessary to promote the cultivation of the most ecologically adapted and efficient crops, particularly in rainfed and dry farming areas. Since ground-water is now meeting more than 50% of the irrigation water needs, the sustainable management of the aquifer should be given importance in the syllabus.

10. Distance education : There are a large number of drop-outs in rural schools and a major segment of the rural population is still unreached so far as new agricultural technology is concerned. SAUs and ICAR institutes should be given the responsibility of training of such rural youth by way of distance education. The aim should be to reach the unreached, particularly women. This will also lead to adoption of new technologies, leading to higher productivity without ecological harm.

- SAUs should establish an independent cell for distance education, develop programmes for training of rural youth for imparting newer skills in agriculture and allied sciences so that they are able to improve farming.
- Five Agricultural Education Media Development Centers should be established to develop capsules for dissemination of knowledge in agriculture and allied sciences through television and use of multimedia as a part of distance learning.
- Provide information empowerment for improving agricultural production through the improvement of productivity per unit of land, water and time.

11. Improved evaluation system : Students performance needs to be assessed to make them to fit the dynamic problem solving situation. This could be achieved by additional mode of evaluation besides the routine practices of conducting examinations at the end of study period. New modes of evaluation need to be devised for continuous evaluation of students, which keep them vigilant and create an environment for involvement in the subject. External evaluation system, completely or partially forces the students to prepare well to face the expectations of the examiners outside the university. Further, it provides an opportunity for

improving the subject with the suggestions made by the experts.

Evaluation of teachers is usually made by the Deans and Directors at periodical interval. The performance of students could be best judged by the students. Hence, a system should provide opportunity for students to evaluate the teachers at the end of each course. This helps the teachers and the institutions to get the feed back of the students' interest facilitating the teachers for further improvements.

12. Enhancing the social relevance : The present-day educational policy does not address the issue of social relevance in totality. Issues like poverty, gender inequity, malnutrition, sustainability and regional imbalances fall in this category. The curriculum must cover these areas to substantially focus on economics, equity, agribusiness, agricultural marketing, value addition, international trade and other related disciplines. Agricultural education has to get out of its mould of a rigid framework and has to take on the role of continuing education where the education process is adjusted to the needs of illiterate, unskilled farmers and farm households. This would imply that the individual farmer should have access to agricultural education facilities at different stages of his/her life, and educational process has to be more directly related to local conditions and be more socially relevant. A number of studies have shown that education and acquisition of functional skills are intimately related with agricultural growth and agrarian prosperity.

Faculty Improvement

Teachers and scientists should have free access for knowledge and given a chance for periodical upgrading of skills :

Teacher training and retraining : Normally the tendency has been one of changing the syllabus, with the teacher competence remaining the same. It is important that teachers are continuously updated and their skills upgraded so that they can inspire students in promoting the cause of sustainable agriculture and rural development. Also, induction training should be given to newly appointed teachers in SAUs. There is a great scope for utilizing the series of emeritus scientists and retired professionals. A structured method of tapping this under-utilized Brain and Skill Bank should be developed. In science, experience which grows with age can be an asset to younger generation. Retired scientists may often be in a position to work and teach in economically and ecologically under-privileged regions. Hence, their expertise should be mobilized for launching a movement for science for Remediating Regional Imbalances in Agricultural Developments Centers of Advanced Studies. The Centers of Advanced Studies established during the VIII Plan need to be continued and further strengthened in view of their excellent role in generating trained personnel for improving the competence of the faculty in new and frontier areas of science. Advanced schools of education and research are particularly needed in the fields of biotechnology, information technology, space technology including agricultural meteorology, renewable energy technologies and management technology.

Personnel policies for remedying regional imbalances : Teachers with good talent in agricultural research and education should be attracted towards agricultural education. The scientists should have operational freedom and a system which provides in-built mechanism to reward performers and achievers. The system must allow for pursuit of excellence in science, freedom to have communication and exchange of ideas with counterparts in developed countries.

Students

The students having grave attitude towards agricultural science should be given to undergo agricultural education. This could be achieved by means of conducting separate entrance examination. Admitted students should be enthused to learn the subjects by means of hands on training and providing the assignment for problem solving situation. Courses should be so designed that the students collect the required information from Library and through internet. Teaching can be made very much interactive and viable by the following means :

- The formal lecture system cannot be replaced totally but could be blended with the system of informal and intelligent discussions.
- Previous preparations by the students and teachers would encourage the leaning process of students effectively.

The approach should focus more on

- Class room discussion
- Workshop
- Brainstorming sessions
- Self study
- Assignments
- Computer based learning
- Learning through video and systems and multimedia. This type of learning process imparts creative thinking and the students would gain intelligent understanding of the subject.

Conclusion

Agricultural education should be based on the future needs. It should be broadly applicable, transferable skills useful to the students to a wide range of jobs in agriculture. Agricultural Sciences have become highly complex and specialized and it is not possible for a single agricultural graduate to master everything. The degree programmes in Agriculture are rather general in nature aimed at giving an insight into the scientific and technical processes in agriculture. The students understanding and comprehension of "Agriculture" as a Dynamic and Integrated Production System were not clearly and adequately explained. All students must learn to appreciate that agriculture as well as rural development represent broad and complex systems.

PROCEEDINGS

of

Papers and Panel Discussions during Technical Sessions of 29th Annual Convention of Indian Agricultural Universities Association

Technical Session I – Governance

This session was chaired by Dr. Mangala Rai, Secretary (DARE), GOI and Director General, ICAR and co-chaired by Dr. S. S. Magar, Vice-Chancellor, DBSKKV, Dapoli and Vice-President, IAUA. Two papers were presented in this session briefly summarized below :

Dr. J. C. Katyal, DDG (Education), ICAR presented paper on “Implications of GATS and Quality Agricultural Education. He elaborated the phasic developments of World Trade Agreement (WTA), General Agreement on Tariffs and Trade (GATT), World Trade Organization (WTO) and deliberated on General Agreement on Trade and Services (GATS). GATS was established in 1995 as a framework for negotiations about trade in services. According to GATS, services include any service in any sector except those in exercise of governmental authority which is supplied neither on a commercial basis nor in competition with one or more service provider. He emphasized that of the WTO agreements, GATS is one of the key agreements and is a legally enforceable set of rules. Once a nation becomes member of WTO, it is subjected to general obligation of GATS. Dr. Katyal emphasized that as GATS requires equal treatment to foreign and domestic providers, GATS covers 12 service sectors including education, each sector has sub-sectors (160 in all). In the education sector, GATS cover (i) Primary education (CPC 921), (ii) Secondary education (CPC 922), (iii) Higher education (CPC 923) – post secondary, technical, vocational and other higher education services leading to University degree or equivalent, (iv) adult education (CPC 924) and other education (CPC 925). GATS covers providing services internationally through FDI and labour mobility and describes four modes of supply including cross border supply e.g. distance education; consumption abroad e.g. students studying abroad; commercial presence e.g. foreign Universities and presence of natural persons e.g. courses offered by foreign teachers.

India has not made specific commitments covering education in GATS as GOI would need to consult stakeholders before making commitments on commercialization of education and training sector which may pose serious risk to PSE. GATS envisages an open global market place where services (education) can be traded to the highest bidder. In principle, India cannot get exemption from GATS because education is not necessarily free as bone fee has to be paid for HE. Most Universities are now heading for commercial appendages (private research funding, consultancy and Government is also accrediting private Universities and Colleges). He highlighted that if India makes commitments covering commercial education services, there would be mounting pressure to expand the scope of education services, further putting public education at risk. The safest way to avoid this is to make no commitments on education sector whether public or commercial.

However, commercialization of education is on and UGC has already issued guidelines

for declaring an Institution as Deemed Universities. Under GATS foreign education service providers would be guaranteed access to the education market without any discrimination. The private sector will have enormous power to undermine the public delivery of educational services. Once a Government agrees to include education into GATS, it cannot withdraw.

Education as service has a huge global market. In this industry, the students are consumers, teachers are service providers and institutions are organizers and teaching learning process is a business for profit making. Also, GOI through extensive privatization, commercialization and deregulation is encouraging this process in HE.

Dr. Katyal stressed on possible questions for the Education Managers of HAE. These include implications on our natural objectives of HAE is opened to international influence. The areas to be restricted, approaches to be adopted by SAUs/DUs, perceptible changes in pattern of HAE, preparedness on the part of SAUs, DUs and ICAR and structural changes needed to manage HAE. In light of these questions and provisions included in GATS he suggested that :

- (i) Affirm PSAE as a social good since it influences lives of millions of small and marginal farmers.
- (ii) Closely monitor the futuristic discussion/negotiations.
- (iii) Create or discussion forum to play a proactive role to impress upon the importance of PSAE to GATS delegation.
- (iv) Work with IUA, ICAR should coordinate.

Dr. Anil Gupta, Professor, IIM, Ahemadabad presented a paper on Quality of Agricultural Education in India and ways to improve it. He emphasized that best comes out of a student/faculty member when he/she is challenged e.g. credit seminar. He highlighted that top of the students remained to be outstanding and our worries were for 2nd, 3rd and 4th rank students. He elaborated education for entrepreneurship and suggested we should cope up with changes in market place through changes in education system. He also highlighted education for sustainability and suggested that we should periodically monitor the research topics for thesis of students. In a survey, he found hardly any change in pattern of research topics of PG students and work on crop-livestock interaction totally lacking. He emphasized education for international arena and suggested that SAU should sign exchange agreements with international institutions with cosmopolitic outlook. We can be service provider in education field and therefore look towards international market in Europe, Africa, etc. We should have education programmes for international markets especially in the area of food science and technology. We are a biodiversity rich nation. We are teaching our students for primary production but we should now teach them about value addition also. He elaborated the importance of paradigm shifts in our education system based on faculty-students model, ICT application in agriculture,

education for professional farmers, education for competitiveness, education for executives, education for serving the poor, education for voluntary sector, education for human values and ethical conduct. Dr. J. K. Ladha added that we should have education for educators and time bound action plan. Dr. Mangla Rai responded to various comments and informed the house of action plan that is being prepared based on systems approach. Dr. S. Nagrajan highlighted the importance of outsourcing faculty, networking among SAUs-IARI. Dr. Nagrajan suggested that we should prepare students for MNCs by introducing courses on economics and management through inter faculty linkages and students movement. Dr. Mangla Rai informed the house that now visiting scientist facility is extended to all SAUs. Some delegates suggested that we should have some mechanism for think tank, task force and all SAUs should have WTO cell/agribusiness centre. Dr. Rai suggested that all such issues be deliberated at forthcoming conference of Vice-Chancellors of SAUs and prepare a status paper highlighting road maps and strategies to achieve these goals.

Dr. P. L. Gautam, Vice-Chancellor, GBPUA&T, Pantnagar initiated discussion on "Agricultural education towards national and international commitments". He suggested that we should have a task force at national level to prepare ourselves for international negotiation, modernize and reorient mindset for capital investment sources of funds, manpower needs in relation to institute's funding, assets, investments. Mobility within and between NARs/SAUs/DUs, networking and ICAR/SAUs, participation of Ph. D. students in academic activities was suggested. He further emphasized that towards our international commitments, we can be service provider in developing countries for helping HRD in Africa, middle east, etc. For that matter, we should set up a consortium for logistic support. Exchange of students and faculty with foreign institutes should be institutionalized and we need to prepare ourselves for international negotiation.

Dr. R. K. Gupta, Regional Facilitator, RWE/CIMMYT, New Delhi highlighted that CG is moving from commodity centre to system approach, disciplinary to interdisciplinary research. He gave an example that many soil scientists have expertise in mineralogy which not much used and in GIS many have no expertise. He emphasized that ICAR can provide funds indefinitely and we need to be articulate for international research. Plot level research should be extrapolatable at regional, country and even group of countries level. We should work on appropriate and cost effective technologies, generate devices for prognosis, diagnosis and options, simulation models, newer tools so that our graduates are nicely equipped with upscaled skills. International research should be more strategic in its application. He stressed on greenhouse gases, residue burning carbon sequestration and dynamics in this context. Dr. J. K. Ladha highlighted that we need to move from strategies adopted researches, combine traditional knowledge with modern science, move from crop production to value addition, bring in right balance between national and international agenda e.g. precision agriculture. He laid stress on "how to teach students and also ourselves (teachers)." Dr. B. S. Dahiya suggested that we should think about social auditing of the environment and developing appropriate

infrastructure to validate scientifically ITK and characterize biodiversity. Dr. J. C. Katyal stressed on our preparedness for emerging issues such as global warning, bioterrorism and artificial intelligence in that context.

Dr. K.V. Raman presented a thought provoking paper on TQM in agriculture education, fact, fallacy or feasible. He defined TQM as a mindset which is quality centred, customer focused, fact based, team driven, senior management led based on synergistic relationships, continuous improvement and self evaluation, a system of on-going process, leadership, strong and positive linkages with all client groups. He elaborated on how does TQM help in education to redefine the role, purpose and responsibilities of Universities, plan leadership at all levels, promote staff development, adapt to changes, be sensitized to social responsibilities and to make need based curriculum. He suggested 10 values for developing a strategic plan on TQM which includes accountability, appreciation, cooperation, creativity, global perspectives, leadership, objectivity, partnership relevance and teamwork. Likewise he emphasized requirements in quality conscious instructional planning and suggestions to achieve quality/excellence. Some of his suggestions are : We should adopt quality improvement as a comprehensive institutional goal, develop appropriate learning environment, establish educational technology and establish quality circles.

His thoughts on positive note were highly appreciated. Dr. J. C. Katyal suggested that improvement in quality should be viewed in context of measurable parameters. He also stressed on developing learning environment.

Panel Discussion : Chairman – Sh. M. K. Miglani

Dr. J. C. Katyal, DDG (Education), ICAR initiated a discussion on a very vibrant topic “Does ICAR need statutory power for quality management in agricultural education?”

Dr. Katyal informed the house that such a topic was debated earlier also in VC’s Conference held in 2003. At that time, it was suggested that :

- (a) a draft paper will be prepared by him (Dr. J. C. Katyal).
- (b) IAUA should pilot this draft to ICAR.

Dr. Katyal advocates that agriculture is the backbone of Indian economy and human resource development in agriculture is very important in present scenario as factor productivity is declining, population is increasing, food security and self-sufficiency is debatable, we are confronted with new economic order and a gradual climate change. He also points out that we are now witnessing uncontrolled growth of SAUs/agriculture colleges/private colleges which leads to less availability of funds to each and every institution. Excessive inbreeding causes

regional focus as against global or national outlook. Unemployment among graduates is increasing and RAs are linked to projects for years together without regular appointments. We should incorporate market relevance for knowledge in our course curricula. Lack of infrastructure for quality education and research and financial health of SAUs are other aspects which need serious thinking and action.

In light of above facts, ICAR should have a major role in regulatory planning, formulation of norms, accreditation and integrated development of education and avoidable proliferation of the institutes. He stressed that Accreditation Board be given authority to make recommendations and the same be observed by SAUs. Also a manpower need assessment, education needs in all aspects, imparting education to receive grants be considered. Dr. Basant Ram stressed on demerits of inbreeding. This affects both research, teaching and administrative matters in SAUs. It was highlighted that restructuring course curriculum must be viewed restructuring research agenda also. Dr. S. Nagrajan suggested the need for change in mindset and it should percolate down below. Academies should sensitize people and develop guidelines. A placement cell/business development cell be created in all SAUs. People with agricultural background be trained at Management Institutes to develop negotiation for research products marketing. Dr. M. P. Yadav endorsed the views of Dr. Nagrajan and suggested that more Centers of Advanced Studies should be established.

Panelists

Dr. S. A. Patil, Vice-Chancellor, UAS, Dharwad stressed on quality of students and their intake, avoid mushrooming of educational institutes. ICAR should have role in governance.

Dr. S. S. Magar, Vice-Chancellor, DBSKKV, Dapoli highlighted the need for solution oriented response by introducing academic discipline, strengthening teacher student relationship, impartial evaluation system.

Dr. C. R. Hazra, Vice-Chancellor, IGAU, Raipur emphasized that the matter of discussion in fact should be "Do we require regulatory authority?" Such a provision will help coping up with state level intervention. ICAR should develop a regulatory authority for better functioning of SAUs. Diversity in course curriculum be left to SAUs.

Dr. N. Balaraman, V.C., TNVASU, Chennai advocated for quality education, manpower need assessment, guidelines to SAUs, interdisciplinary approach, etc. Secretary General, IUA elaborated on the importance of merit of the students, their role in functioning, quality education, admission mechanism transparency, proper orientation of the faculty, open avenue at Ph. D. level and their important aspects of quality education.

Sh. M. K. Miglani summed up the discussions and suggested that President, IAUA

should get the draft proposal for statutory powers to ICAR received by a committee of Vice-Chancellors before sending it to DG/Secretary, DARE. The general consensus of the house was that ICAR should have statutory powers.

Dr. N. Balaraman, V. C., TNVASU, Chennai presented an overall view of Veterinary Education System being followed at TANUVAS. He was of the opinion that keeping in view the overall activities a teacher has to undertake, the prescribed workload is on higher side. During the course of discussions, it emerged that a uniform workload system for teachers/scientists/extension specialists should be followed in all SAUs.

Dr. A. Q. John, Dean PGS, SKUAS&T, Sri Nagar discussed about the need for broad basing of agricultural education and information connectivity and stressed that broad basing is needed in view of privatization and globalization of agricultural research and education. Changing technologies and globalization requires holistic approach to cater to quality in agricultural education vis-à-vis international commitment, food security and frontier sciences i.e. biotechnology, remote sensing, I.T. connectivity, etc. to ultimately benefit our rural people.

Dr. S. S. Magar, Vice-Chancellor, DBSKKV, Dapoli elaborated many facets relating to quantifying the output of individual teacher, department and college and so to say the State Agricultural Universities. He highlighted the strong network of national education system involving large number of agricultural universities and colleges is the main strength of the country. However, the higher education in agricultural universities is confronted with a large number of problems in recent years that have led to dwindling of standards at various levels of educational process. One of the several remedies suggested lies in introducing the concept of "Accountability". The accountability is to be considered in totality at the administrative, academic, financial, individual and institutional levels. Academic responsibility is the major one for institutions of higher education. The foremost being to impart accumulated knowledge to the younger generation through teaching and evaluation, to generate new knowledge through research and to extend the benefit of academic work to the people at large in service of humanity. The academic accountability has to be viewed at teacher, department, college and university level.

The educational system now needs improvement. This can be done by creating conducive environment for education by recognizing right people and providing them opportunities for accelerated promotions or rewards and by devising good evaluation and appraisal systems which are based on transparency and individual's merit and potential. The appraisal system should be such that it should provide clues and weakness to help individuals to know to overcome weakness and improve strength, create culture and openness and mutual trust to strengthen superior-subordinate relationship, toning up more communication skills, identifying individuals with high potential and merits so as to use their capabilities, etc. He

concluded that there is need to add new dimensions to quantify the output of individual teacher, department and college and several issues need to be considered. Dr. Magar highlighted the achievement made by his university by adopting new technologies and harnessing their impact on productivity of horticultural crops, designing new equipments to be distributed among farmers at no profit basis. He said that all SAUs must project their achievements. The Chairman Sh. M. K. Miglani endorsed these views and concluded that accountability be observed.

There was a good discussion on several aspects leading to "Accountability" and there was general consensus in favour of the need of accountability in SAUs. A draft proposal in this direction may be submitted to ICAR for uniform measure of accountability.

Dr. O. P. Verma, Dean, COA, JNKVV, Jabalpur presented a paper on how to quantify the output of an individual teacher, department and then the College. He emphasized that a teacher plays a multi dimensional role and a true sense as an academic leader of the society as a tutor, researcher, investigator, social performer, value generator and pioneer in promotion of new concepts.

Quality evaluation can help in measuring the true performance in contributions of every teacher on a regular basis and to guide him about further improvement. Some of the methods of evaluation are self-assessment reports, class-room observations and evaluation of teachers' performance by the students.

RECOMMENDATIONS

During technical sessions of 29th Annual Convention of Indian Agricultural universities Association (January 12-13, 2005)

- ★ ICAR should have a major role in regulatory planning, formulation of norms, accreditation and integrated development of education and avoidable proliferation of the institutes. ICAR should have statutory powers.
- ★ Specific commitments covering education in GATS be made in consultation with stakeholders before making commitments on commercialization of education and training which may pose risks to public sector education.
- ★ Education as service has a huge global market. In this industry, students are consumers, teachers are service providers and institutions are organizers. GOI through extensive privatization, commercialization and deregulation should encourage this process in higher education.
- ★ In the light of provisions included in GATS (I) affirm Public Sector Agricultural Education (PSAE) as a social good since it influences lives of millions of small and marginal farmers.
- ★ Closely monitor the futuristic discussions/negotiations to safeguard Indian interest.
- ★ Create a discussion forum to play a proactive role to impress upon the importance of PSAE.
- ★ IAUA and ICAR should coordinate the work.
- ★ Education for entrepreneurship should be promoted. It should include changes in market place through changes in education system.
- ★ SAUs should sign exchange agreements with international and national institutions with cosmopolite outlook.
- ★ Our educational system should have paradigm shift based on faculty-student model, ICT application in agriculture, education for professional farmers, education for competitiveness, education for executives, education for serving the poor, education for voluntary sector, education for human values and ethical conduct and education for

educators.

- ★ Outsourcing of faculty and networking among SAUs and national institutes should be encouraged to prepare students for MNCs.
- ★ SAUs should have Think Tank, Task Force and WTO cell/agribusiness Centre.
- ★ We should have task force at national level to prepare ourselves for international negotiation, modernize and reorient minds, etc. for capital investment.
- ★ Mobility within and between NARs/SAUs/DUs networking and ICAR/SAUs participation of Ph. D. students in academic activities should be encouraged.
- ★ India can be service provider in developing countries for helping HRD in Africa, middle east, etc. In that context, India should set up a consortium for logistic support. Exchange of students and faculty with foreign institutes should be institutionalized.
- ★ International research should be more strategic in its application, and we should move from commodity centre to system approach, disciplinary to inter-disciplinary research, combine traditional knowledge with modern science and bring in right balance between national and international agenda.
- ★ We should adopt quality improvement as a comprehensive institutional goal, develop appropriate learning environment, establish educational technology and establish quality circles for total quality management. Improvement in quality should be viewed in context of measurable parameters like accountability, creativity, leadership, appreciation and team work.
- ★ A uniform work load system for teachers/scientists/extension workers should be followed in all SAUs.
- ★ Changing technologies and globalization requires holistic approach to cater to quality in agricultural education vis-à-vis international commitments, food security and frontier sciences, *i.e.* biotechnology, remote sensing, I. T. connectivity, etc. to ultimately benefit our rural people.
- ★ A draft proposal on accountability in SAUs be prepared by ICAR for uniform measure of accountability and this be debated by SAUs for consensus.

LIST OF PARTICIPANTS OF 29TH ANNUAL CONVENTION OF IAUA

- | | |
|--|--|
| 1. Dr. Mangala Rai
Director General, ICAR &
Secretary, DARE,
GOI, New Delhi | 12. Dr. N. Balaraman
Vice-Chancellor
TNV&ASU, Chennai |
| 2. Dr. J. C. Katyal
DDG (Education),
ICAR, New Delhi | 13. Prof. Anil K. Gupta
Kasturbhai Lalbhai Chair in
Entrepreneurship,
IIM, Vastrapur, Ahmedabad |
| 3. Dr. S. N. Puri
President, IAUA &
Vice-Chancellor,
CAU, Imphal | 14. Dr. R. K. Gupta
Regional Facilitator,
RWC/CIMMYT, New Delhi |
| 4. Dr. S. S. Magar
Vice-Chancellor,
BSKKV, Dapoli | 15. Dr. S. N. Tripathi
Principal Scientist (Genetics),
IGFRI, Jhansi |
| 5. Dr. M. P. Yadav
Director,
IVRI, Izatnager | 16. Dr. Jag Shoran
Director,
DWR, Karnal |
| 6. Dr. S. A. Patil
Vice-Chancellor,
UAS, Dharwad | 17. Dr. O. P. Verma
Dean, College of Agriculture,
JNKVV, Jabalpur |
| 7. Dr. S. S. Negi
Vice-Chancellor,
Dr. YSPUH&F, Nauni, Solan | 18. Dr. L. L. Somani
Director RI,
MPUA&T, Udaipur |
| 8. Dr. S. Nagarajan
Director,
IARI, New Delhi | 19. Dr. V. D. Patil
Director of Instruction &
Dean (F/A),
Dr. PDKV, Akola, MS |
| 9. Dr. P. L. Gautam
Vice-Chancellor,
GBPUA&T, Pantnagar,
Udham Singh Nagar (UC) | 20. Dr. V. S. Korikanthimath
Director,
ICAR Research Complex for Goa
Old Goa, Goa |
| 10. Prof. Parmatma Singh
Vice-Chancellor,
RAU, Bikaner | 21. Dr. J. K. Ladha
Representative,
IRRI, New Delhi |
| 11. Dr. C. R. Hazra
Vice-Chancellor,
IGAU, Raipur | 22. Dr. R. P. Singh
Executive Secretary,
IAUA, New Delhi |

- | | | | |
|-----|---|-----|--|
| 23. | Dr. K. V. Raman
Chairman,
SAP-NATP, Chennai | 33. | Dr. D. Naik
DPME,
OUA&T, Bhubaneswar |
| 24. | Dr. A. Q. Jhon
Director RI/ Dean, PGS,
Sher-e-Kashmir UAS&T (K), Srinagar | 34. | Dr. H. N. Singh
Dean, CoVSc,
Pt. DDUPCVVAGAS,
Mathura, UP |
| 25. | Dr. Munappa
Dean,
UAS, Bangalore | 35. | Dr. S. K. Garg
Professor & Head,
Pharmacology, CoVSc,
Pt. DDUPCVVAGAS,
Mathura |
| 26. | Dr. J. P. Tiwari
Registrar & Dean, PGS
GBPUA&T, Pantnagar | 36. | Dr. (Ms.) Vijaya Khader
Dean, College of
Home Science,
ANGRAU, Hyderabad |
| 27. | Dr. Basant Ram
Director Research,
GBPUA&T, Pantnagar | 37. | Dr. L. S. Brar
Prof. & Head, Department of
Agro & Agromet,
PAU, Ludhiana |
| 28. | Dr. Ram Ji Maurya
Monitoring Officer,
GBPUA&T, Pantnagar | 38. | Dr. B. S. Punia
Director,
CIRB, Hisar |
| 29. | Dr. P. C. Katoch
Dean, College of Agriculture,
CSK HPKV, Palampur | 39. | Dr. Nikhil Kumar Singh
Liason Officer,
CAU, Imphal |
| 30. | Dr. M. Mohan Das
Executive Director,
KAU, Thrissur | 40. | Mr. R. S. Tripathi
Tech. Asstt.,
RWC/CIMMYT, New Delhi |
| 31. | Dr. B. C. Choudhary
Director Research,
RAU, Pusa (Samastipur) | | |
| 32. | Prof. Dayanand Dongaonkar
Secretary-General,
AIU, New Delhi | | |

PROGRAMME OF 29TH ANNUAL CONVENTION OF IAUA

12-01-2005

08.30-09.30 a.m.	Registration	Venue : Faculty House
09.30-10.00 a.m.		Visit of Chief Guest to Exhibition

Venue : Indira Gandhi Auditorium

INAUGURAL SESSION

10.00-10.05 a.m.	Lighting of Lamp	
10.05-10.10 a.m.	Sarswati Vandna	
10.10-10.20 a.m.	Welcome Address	Shri M.K. Miglani, Vice-Chancellor, CCS HAU, Hisar
10.20-10.30 a.m.	Issues before IAUA	Dr. S.N. Puri, Vice-Chancellor, CAU, Imphal, President – IAUA
10.30-10.40 a.m.	Address	Dr. J.C. Katyal, DDG (Education)
10.40-10.50 a.m.	Scroll of Honour	Presentation of Scroll of Honour
10.50-11.20 a.m.	Address by Chief Guest	Dr. Mangala Rai, Secretary, DARE, GOI, and DG, ICAR
11.20-11.25 a.m.	Vote of Thanks	Dr. R.P. Singh, Executive Secretary, IAUA
11.25-12.00 noon	Tea Break	

TECHNICAL SESSION-I GOVERNANCE

12-01-2005

(12.00-13.00 p.m.)

Chairman	Dr. Mangala Rai, Secretary (DARE), GOI and DG, ICAR
Co-Chairman	Dr. S. S. Magar, Vice-Chancellor, BSKKV, Dapoli Vice-President, IAUA
12.00-12.30 p.m.	1. Implication of GATS and Quality of Agricultural Education – Dr. J. C. Katyal, DDG (Education), ICAR
12.30-13.00 p.m.	2. Quality of Agricultural Education in India and Ways to Improve it – Prof. Anil K. Gupta, IIM, Ahmedabad Discussion

13.00-14.30 p.m.	Lunch at Faculty Club, CCSHAU, Hisar
14.30-15.00 p.m.	3. TQM in Agricultural Education : Fact , Fallacy or Feasible -Dr. K. V. Raman
15.00-15.30 p.m.	4. Prospects of MIS in Agriculture-Prof. B. S. Panwar, IIT, New Delhi
15.30-15.45 p.m.	Tea Break
Panel Discussion	
15.45-17.00 p.m.	Does ICAR need statutory power for quality management in agriculture education? Presentation by : Dr. J. C. Katyal, DDG (Education), ICAR Panelists : Dr. K. S. Aulakh, VC, PAU, Ludhiana Dr. P. L. Gautam, VC, GBPUA&T, Pantnagar Dr. S. S. Magar, VC, BSKKV, Dapoli Dr. C. R. Hazra, VC, IGAU, Raipur Dr. N. Balaraman, VC, TNVASU, Chennai
17.00-17.45 p.m.	Agricultural Education Towards National and International Commitments- Dr. P. L. Gautam, Vice-Chancellor, GBPUA&T, Pantnagar Panelists : Dr. R. K. Gupta, Regional Facilitator, RWC/ CMMYT, New Delhi Dr. J. K. Ladha, Representative, IRRI, New Delhi
20.00 p.m.	Dinner at Faculty Club

TECHNICAL SESSION - II ACCOUNTABILITY AND RELEVANCE

13-01-2005

(09.30-11.10 a.m.)

Chairman	Dr. Mangala Rai, Secretary (DARE), GOI, and DG, ICAR
Co-Chairman	Dr. S. N. Puri, Vice-Chancellor, CAU, Imphal
09.30-09.50 a.m.	1. Workload of Teachers and their Accountability in Agricultural Education - Dr. N. Balaraman, Vice-Chancellor, TNVASU, Chennai
09.50-10.10 a.m.	2. Status and Potential for the Use of Open, Distance and Technology Mediated Learning in the Kerala Agricultural

University – Dr. M. Mohan Das, Executive Director,
Virtual University for Agricultural Trade

- | | |
|------------------|---|
| 10.10-10.30 a.m. | 3. Broad Basing of Agricultural Education and Information
Connectivity – Anwar Alam, Vice-Chancellor and
Dr.A. Q. Jhon, Director Resident Instruction/Dean, PGS,
SKUAS&T, Srinagar |
| 10.30-10.50 a.m. | 4. How to Quantify the Output of Individual Teacher,
Department and then the College – Dr. O. P. Verma,
Dean, College of Agriculture and Vice-Chancellor,
JNKVV, Jabalpur |
| 10.50-11.10 a.m. | 5. Public and Private Sector Participation and the Quality
of Education in India – Dr. S. A. Nimbalkar,
Vice-Chancellor, PDKV, Akola |
| 11.10-11.25 a.m. | Tea Break |
| 11.25-12.10 p.m. | General Body Meeting of IAUA |
| 12.10-13.00 p.m. | Plenary Session |
| 13.00-14.15 p.m. | Lunch at Faculty Club |

COMMITTEES FOR ARRANGEMENT OF 29TH ANNUAL CONVENTION OF IAUA

I. Organizing Committee

Sh. M. K. Miglani, IAS (Retd.)

Chairman

Vice-Chancellor

Dr. S. N. Puri, Vice-Chancellor, CAU, Imphal

President, IAUA

Dr. S. S. Magar, Vice-Chancellor, BSKKV, Dapoli

Vice-President, IAUA

Dr. M. P. Yadav, Director, IVRI

Secretary, IAUA

Dr. V. M. Pawar, Vice-Chancellor, MAU, Parbhani

Member, IAUA

Dr. S. A. Patil, Vice-Chancellor, UAS, Dharwad

Member, IAUA

Dr. K. S. Aulakh, Vice-Chancellor, PAU, Ludhiana

Member, IAUA

Dr. J. C. Katyal, DDG (Education)

Invitee – Representative, ICAR

Dr. R. P. Singh,

Executive Secretary, IAUA

Dr. M. S. Kuhad, Registrar

Dr. A. P. Singh, Dean, COVS

Dr. Satyavir, Dean, COA

Dr. I. S. Sheoran, Dean, COBS&H

Dr. B. S. Dahiya, Director of Research

Dr. K. L. Raheja, Dean, COAS

Dr. (Ms.) Savita Singal, Dean, COHS

Dr. S. S. Dahiya, Dean, PGS

Dr. Pratap Singh, Dean, COAE&T

Sh. Prem Singh, University Librarian

Sh. R. C. Goyal, Comptroller

Dr. V. A. Sangwan, C. M. O.

Dr. R. S. Dalal, Director, HRM

Dr. S. S. Bisla, Director Students' Welfare

	Sh. S. S. Kashnia, E. O. & S. E. Dr. R. K. Malik, DEE	Organizing Secretary
II.	Stay Arrangements Committee Dr. M. S. Kuhad, Registrar Dr. R. S. Single, Assoc. Prof., ADT Dr. J. S. Dhankhar, SES(Soils) Dr. G. P. Singh, ADT	Chairman Convenor
III.	Food Committee Dr. K. L. Raheja, Dean, COAS Dr. V. S. Malik, Assoc. Dean, PGS Dr. Narender Singh, Scientist (Veg.) Dr. S. N. Singh, Scientist (Agron.) Dr. Ramesh Goyal, Scientist, HRM Dr. Rishi Tayal, Secretary, F. C.	Chairman Convenor
IV.	Programme Committee Dr. Satyavir, Dean, COA Dr. R. K. Bahl Dr. D. C. Gupta Dr. Jit Singh, ADR	Chairman Convenor
V.	Cultural Programme Committee Dr. S. S. Bisla, DSW Dr. M. S. Yadav, ADSW Dr. R. S. Balyan, ADSW Dr. R. K. Yadav, OSD (Seeds) Dr. K. K. Verma, Deptt. of Nematology Dr. Harish Gulati, Deptt. of LPM	Chairman Convenor
VI.	Hospitality Committee Dr. (Ms.) Savita Singal, Dean, COHS Dr. (Ms.) Neelam Khetarpal, Prof. F & N, COHS Dr. (Ms.) Indu Grover Dr. V. S. Malik, Assoc. Dean, PGS	Chairman Convenor
VII.	Registration Committee Dr. Pratap Singh, Dean, COAE&T Dr. (Ms.) Indu Grover, Prof., HSEE Dr. (Ms.) Manju Dahiya Dr. (Ms.) Lali Yadav, Prof., HSEE	Chairman

- Dr. Y. S. Tomer, SES (SP)
- VIII. Transportation Committee**
- Dr. A. P. Singh, Dean, COVS Chairman
- Dr. R. L. Madaan, SES (Pl. Path.)
- Dr. R. S. Dhukia, SES (Agron.)
- Dr. Ashwani Kumar, Scientist, ATIC
- IX. Finance and Purchase Committee**
- Dr. S. S. Dahiya, Dean, PGS Chairman
- Dr. Anoop Singh, Prof. (Soils)
- Dr. P. K. Sardana, Scientist (Agril. Economics)
- Computer Centre, COA
- Dr. S. K. Sharma, Scientist, ATIC
- Sh. D. Paul Sharma, Dy. Comptroller Convenor
- X. Publication Committee**
- Sh. Prem Singh, Univ. Librarian Chairman
- Dr. R. P. Bansal, Assoc. Director (Publications)
- Sh. Randhir Singh, DA (Publications) Convenor
- XI. Health Services Committee**
- Dr. V. A. Sangwan, CMO Chairman
- Dr. Sunil K. Prasad, Medical Officer
- Dr. R. K. Godara, SES (Hort.) Convenor
- XII. Stage Arrangements & Decoration Committee**
- Sh. S. S. Kashnia, E. O. & S. E. Chairman
- Dr. M. S. Hooda, HOD, Forestry & LSO Convenor
- XIII. Exhibition & Interior Decoration Committee**
- Dr. R. S. Dalal, Director, HRM Chairman
- Dr. (Ms.) Sudesh Gandhi, FRM, COHS
- Dr. R. K. Patel, Assoc. Director (HRM)
- Dr. (Ms.) Indu Grover, Professor, HSEE
- Sh. Sachdev Mann Convenor
- Exhibition Officer, O/o the ADE
- XIV. Public Relations and Media Committee**
- Dr. R. C. Sihag, Prof., COBS&H Chairman
- Ms. R. R. Hooda, PRO
- Dr. B. R. Batra, SES (Vegetable)



Front Cover Photo : Indira Gandhi Auditorium
Back Cover Photo : Fletcher Bhawan