

Contents

[Foreword](#)

[Preface](#)

[List of Acronyms](#)

[Recommendations](#)

1. [Proceedings and Major Conclusions](#)
2. [Post-Graduate Curriculum in Agricultural Economics - A Synthesis](#)
S. Selvarajan
3. [Post-Graduate Curriculum in Agricultural Extension - A Synthesis](#)
Rasheed Sulaiman V

Contributed Papers

4. [Post-Graduate Education in Agricultural Economics - Experience of TNAU](#)
S. Krishnamoorthy
5. [Post-Graduate Teaching in Agricultural Economics](#)
L. R. Singh
6. [Current Status and Suggested Reorientation in the Curriculum for Masters Degree in Agricultural Economics](#)
V.K. Pandey
7. [Teaching Agricultural Economics at Masters Level - Issues for Discussion](#)
S. Suryaprakash
8. [Need for Agri-Business Management Programme in State Agricultural Universities](#)
P.G. Chengappa
9. [Post-Graduate Programme in Agricultural Economics-Experience of IARI](#)
Paramatma Singh
10. [Improving Post-Graduate Curriculum in Agricultural Extension - Experience of IARI](#)
K. Vijayaraghavan and Y.P. Singh
11. [Extension Education Curricula at Masters Level - Some Reflections](#)
C. Bhaskaran and Ranjan S. Karippai
12. [Post-Graduate Teaching in Social Sciences with Particular Reference to Agricultural Extension](#)
S. Y. Kulkarni and P. S. Shinde
13. [Post-Graduate Teaching in Agricultural Extension](#)
J. Vasanthakumar and Santha Govind
14. [Post-Graduate Teaching in Agricultural Extension with Relevance to Current and Emerging Social Demands](#)
P. Venkataramaiah and M. Suresh Kumar

[List of Participants](#)

Preface

The contribution of social sciences in improving focus, design, implementation and evaluation of agricultural R&D does not need any elaboration. Social sciences education in National Agricultural Education System is now about four decades old. Several developments in subject matter, theory and research methods have occurred during the intervening period. The nature of problems as well as the priorities before Indian Agriculture have also changed. There has been a change in job opportunities too. Despite this dynamism on the demand side, post graduate education has not received much attention in the past with regard to updating of courses in view of emerging needs of changing scenario and frontier areas as highlighted in the Third Deans' Committee report.

The students coming for post-graduate training in the disciplines of Agricultural Economics and Agricultural Extension in the ICAR-SAU system are mostly from agriculture and allied sciences. They cannot be expected to have a detailed knowledge of the basic concepts of the respective social sciences, unless provided through electives in the under graduate curricula. Critical gaps in subject coverage have to be squarely and comprehensively addressed starting from under graduate to post graduate levels by bringing modifications in focus/objectives of the programme, instructional techniques and/or by developing clear cut specialisations in the programme. In the present age of academic specialisation, the job markets have also become specialised. Enriching the faculty of post graduate departments with teachers of excellent academic background and research experience in the relevant specialisations should be a priority area. The capability of the post graduate departments has to be upgraded, diversified and substantially strengthened in terms of personnel and infrastructure.

Social science teaching and research was assigned low priority in the agricultural research system till recently. This was reflected in the positions created/filled as well as in budget allocation. Several recent reviews of the ICAR/SAU system have commented on the need to strengthen social sciences. A felt need is emerging for the social science to play a pro-active role in facilitating future agricultural growth. For the social science education system to respond to the changing needs and demands, structural understanding of the current status and future requirements in respect of curricula, specialisation, research training, faculty expertise and resource needs is essential for planning future strategies. It is in this context, a National Workshop on Post-Graduate Teaching in Social Sciences was planned to deliberate on the needed reorientation in the curriculum taking into cognizance the current status, emerging needs and immediate priorities.

All the SAUs within NARS were contacted in September, 1995 to obtain their course curriculum syllabus and coverage details in the disciplines of Agricultural Economics and Agricultural Extension. Up to March, 1996, only five universities responded by providing the requisite information. After the Workshop, all the remaining SAUs were once again contacted to ensure adequate regional coverage while synthesising an integrated structural understanding of existing masters programme in Agricultural Economics and Agricultural Extension. The response, this time, was encouraging with 12 Departments of Agricultural Economics and 12 Departments of Agricultural Extension responding to our call which formed the basis for the synthesis papers included in this volume. It is hoped that this endeavour jointly started by NARS social science units would promote more such activities at regular intervals covering entire gamut of agricultural education planning, management, monitoring and implementation.

November, 1996
New Delhi

Rasheed Sulaiman V
S. Selvarajan
Editors

List of Acronyms

| | |
|--------|---|
| AU | - Annamalai University, Chidambaram, Tamil Nadu |
| APAU | - Andhra Pradesh Agricultural University, Hyderabad, Andhra Pradesh |
| CSAUAT | - Chandra Shekhar Azad University of Agriculture and Technology, Kanpur, Uttar Pradesh. |
| IAR1 | - Indian Agricultural Research Institute, New Delhi |
| IGKV | - Indira Gandhi Krishi Vishwavidyalaya, Raipur, Madhya Pradesh |
| JNKV | - Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur, Madhya Pradesh |
| KAU | - Kerala Agricultural University, Trichur, Kerala |
| OUAT | - Orissa University of Agriculture & Technology, Bhubaneswar, Orissa |
| PAU | - Punjab Agricultural University, Ludhiana, Punjab |
| TNAU | - Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu |
| TNVASU | - Tamil Nadu Veterinary & Animal Sciences University, Madras, Tamil Nadu |
| UAS | - University of Agricultural Sciences, Dharwad, Karnataka |
| HPKV | - Himachal Pradesh Krishi Vishwavidyalaya, Palampur, Himachal Pradesh |
| YSPU | - Dr. Y.S. Parmar University of Horticulture and Forestry, Solan, Himachal Pradesh |
| GBPUAT | - G.B. Pant University of Agriculture and Technology, Pantnagar, Uttar Pradesh |
| MPKV | - Mahatma Phule Krishi Vidyapeeth, Rahuri, Maharashtra |
| PDKV | - Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola, Maharashtra |
| KKV | - Konkan Krishi Vidyapeeth, Dapoli, Maharashtra |

Recommendations

Organisational aspects

- The Post-graduate curricula in Agricultural Economics and Agricultural Extension being followed at present can not cope with the emerging professional demand and thus need to be restructured. In Agricultural Economics, economic theory, decision analysis, trade and agri-business should become the central focus. Courses in institutional economics, history of economic thought, natural resource and environmental economics need to be strengthened. In Agricultural Extension, emphasis should be given on participatory extension methodologies, programme development, monitoring and evaluation, training in modern communication and instructional technologies including media production, application of computer in extension, management of extension organisation including NGOs and entrepreneurship development.
- Specialisation in Agricultural Economics could be in the areas of natural resource economics, agricultural marketing, agricultural development and policy and agri-business management. In the case of extension education, development communication, extension management and human resource management are the recommended areas for specialisation. Specialisation could be through separate programmes as well as thesis research. Job analysis studies to know the market demand is favoured.
- Practical training could be improved through attaching students with farm families, development organisations or industry for prescribed periods. Special TA grant for taking students to fields, rural areas, markets, agro industries, and other development institutions needs emphasis. Urgent measures to fill vacant teaching positions are essential. Teaching departments need to be equipped with computer lab, data bank, audio-visual aids and networking facilities.

Institutional aspects

- Existing faculty needs to be trained in emerging areas. Recruitment of teachers from diverse disciplinary backgrounds and bringing experts through the visiting faculty scheme are the recommended strategies to enrich post graduate faculty.
- Inadequate budgetary and infrastructural support to social science divisions is a matter of serious concern. Separate norms and standards for apportioning resources and grants for social science divisions needs to be developed and implemented.

Policy aspects

- Centres of excellence at regional levels should be established in potential State Agricultural University (SAU) social science units to meet the training and capacity building needs at various regions. In such centres of excellence, a minimum of 25 per cent of seats/posts should be made available for other states/ institutions, to promote mobility of students and staff across ICAR/SAU units in pursuit of excellence in the respective areas of specialisation.
- In the case of multi-campus SAUs, post graduate programme in social sciences should be confined to a single/main campus, wherein enough infrastructural and academic support is normally available.
- Board of Studies and Academic Councils should have peers from outside. Statutory changes for this, if necessary, are to be adopted.

1 Proceedings and Major Conclusions

The role of social sciences in improving focus, design, implementation and evaluation of agricultural R&D does not need any elaboration. The majority of social scientists within the ICAR/SAU system belong to the disciplines of Agricultural Economics and Agricultural Extension. Post graduate education programmes in these two disciplines are now about four decades old. Though these disciplines have grown in terms of scope, relevance and maturity during these years, the post-graduate education in them has not improved to the extent desired, keeping in view the rising expectations from them at present. Several recent reviews of the ICAR/SAU system have commented on the need to strengthen social sciences. To be relevant and to meet the rising expectations, the masters degree programme needs to be substantially modified. The issue is how to develop a rational masters programme keeping in view the changes taking around.

As one of our responses to this, a National Workshop on Post-Graduate Teaching in Social sciences was organised by the National Centre for Agricultural Economics and Policy Research (NCAP) New Delhi on 13 and 14 March 1996. The Workshop was attended by eminent economists, professors and senior faculty members from the disciplines of Agricultural Economics and Agricultural Extension from SAUs and deemed universities of ICAR. Professor S.S. Johl inaugurated the Workshop. The inaugural session was chaired by Dr. M.L. Madan, Deputy Director General (Animal Sciences) of ICAR. There were three specific subject sessions namely curricula needs, research training and area specialisation and institutional and policy support needs. The plenary -session of the workshop held on 14 March was chaired by Dr. S.L. Mehta, Deputy Director General (Education), ICAR.

For Session I (Curricula needs) and Session II (Research training and area specialisation), parallel sessions were held for the two disciplines. A joint session on institutional and policy support needs (Session III) was also organised.

The major issues discussed during these sessions are listed below:

Session I : Curricula needs

1. What are the current expectations from a post-graduate in terms of expertise?
2. Whether the curricula followed at present is meeting those expectations?
3. Whether a change in focus/ objectives of the programme is necessary keeping in view the changing job scenario?
4. What are the critical gaps in the curricula at the masters level? How can we address these?
5. Can mere introduction of new courses in the curricula help in closing the above gaps?
6. Within the given time frame, how could we enhance understanding of the subject at the masters level? What is the role of minors?
7. Whether providing electives at Under Graduate (UG) level and changing instructional techniques essential?
8. Do we have adequate expertise to handle courses in the emerging areas?
9. Whether teachers from more diverse disciplinary backgrounds are needed for enriching the Post Graduate (PG) Faculty?

Session II : Research training and area specialisation

1. What are the major sub-disciplines/areas of specialisation offered within the discipline?
2. Whether specialisation is through separate programme *per se* or through thesis research only?
3. Is it necessary to develop a clear cut specialisation at the masters level?

4. Has the present system of providing research training through thesis work been satisfactory?
5. How can we overcome the limitations in M.Sc research programme?
6. Whether replacing M.Sc research work with some other module is desirable?

Session III : Institutional and policy support needs

1. Whether adequate institutional support is available for improving quality education at the PG level?
2. If not, what type of critical support in terms of infrastructure, human resource and funds are necessary?
3. Whether incentives to improve and reward good teaching are available? If not, what kind of policy decision is required for improving teaching standards?
4. Whether internal quality control mechanisms (Board of Studies, evaluation and peer interaction) are adequate?

The major points that emerged from the deliberations are as follows.

Post-graduate curricula needs, research training and area specialisation

Agricultural economics

1. A post-graduate in agricultural economics has to be theoretically and analytically equipped to be able to conceive and implement the programmes relevant to the emerging needs in his/her area of specialisation. Existing system through course and research work provides for adequate training and skill but implementation is tardy and lax which needs to be tightened. To achieve this, restructuring of agricultural economics curricula should start from UG level.
2. Existing curricula both in contents and delivery are weak in economic theory. By restructuring UG curriculum, one course each in micro and macro should be planned. The course contents should be dynamic and properly integrated leaving the basics to UG level courses. Courses in institutional economics, history of economic thought, natural resource and environmental economics and International trade are suggested for restructuring and strengthening at the masters level.
3. A minimum of 10 credit hours in agricultural economics with a comprehensive coverage in the area of economic theory, institutional economics and economic thought should be designed for the UG curriculum.
4. Liberalisation has led to increased participation of corporate sector in agriculture and allied activities. The job opportunities and requirements are changing and to meet this demand more emphasis will be needed in the area of trade and agri-business management.
5. While restructuring the curricula, economic theory, decision analyses and practical experience in agri-business should become the central focus. A cafeteria approach of providing specialisation within the discipline as well as offering different programmes like masters degree in Agricultural Economics, Agricultural Marketing, Business management etc. is favoured.
6. Minors in statistics/mathematical tools and computer science are not only essential but they should also be strengthened and rationalised to meet the changing needs.
7. In case of multi-campus environment of each SAU, post-graduate programme should be confined to single campus.
8. If eligible/capable/competent students for agricultural economics are not available from agriculture/allied stream in adequate number, admission should be opened up for general graduates to the extent required for running a viable masters degree programme in agricultural economics. In such cases, remedial/ deficiency courses have to be carefully planned to take care of the diversity in students' background.
9. To equip the teaching faculty to handle the courses in the new and frontier areas of social science, NCAP should take the lead in the capacity building exercise.
10. In new and specialised areas like agri-business, business law, international trade and environmental economics, the faculty needs to be trained.

11. Regional based training and capacity building in teaching faculty should be gradually oriented towards creating centres of excellence in specific area of specialisation in different SAU social science units. This would also promote mobility of students/staff across SAU/ICAR units within the region in pursuit of excellence in the respective areas of specialisation. In such centres of excellence, a minimum of 25 per cent of seats/posts should be made available for other states/institutions. NCAP should assist various activities of these centres of excellence.

Agricultural extension

1. The post-graduate teaching should inculcate a sound theoretical knowledge and practical skills related to the whole process of extension education for agricultural and rural development. Development of competencies in areas such as participatory extension methodologies, programme development, monitoring and evaluation, modern communication and instructional technologies, media production, application of computers in extension, management of extension organisations, human resource management, modern training methods, experiential learning methods, organisation and management of NGOs and entrepreneurship development are essential.
2. The curricula followed at present are not sufficient keeping in view the changing job scenario and the emerging professional needs and challenges. Mere introduction of new courses will not help in closing the above gaps. There is a need for a thorough revision of entire curriculum. This should be undertaken by every university.
3. The major sub-areas of specialisation to be offered within extension education are development communication, extension management and human resource management and training. The specialisation has to be through separate programme as well as thesis research.
4. The present system of providing research training through thesis should continue.
5. There is a need to train existing faculty in emerging areas. Further, teachers should be recruited from diverse disciplinary backgrounds to enrich PG faculty. The expertise available in other universities should be utilised through Visiting faculty' scheme. The practical training at masters level can be improved by attaching students with farm family, development organisation or industry for a prescribed period to get practical experience and insight.
6. The understanding of subject matter at the masters level can be increased by making use of innovative teaching methods such as case study, tutorial system, participatory teaching, discussion methods and micro-teaching.
7. There is no need to offer elective subjects at UG level.
8. Minors at PG level should be limited for providing breadth and should be decided according to the specific needs of the students.
9. M.Sc programme on special areas such as development communication, extension management, and human resource management should be planned only after understanding the demands of public sector, corporate sector, and Non Governmental organisations (NGOs) through job analysis studies.

Institutional and policy support needs

1. The infrastructural, financial and manpower provisions for social sciences are far from adequate and there is an urgent need to raise the allocation for these facilities for social sciences in SAUs and ICAR.
2. Use of the same norms and standards for apportioning resources/grants as applicable to biological sciences is not appropriate for social sciences. Since these disciplines require more funds for travel, field studies, stationery etc. provision should be there to use research grants for these purposes by reallocating funds from the other heads less relevant for social sciences.
3. There is need to provide transport or special TA grants to social science departments for taking students to fields, rural areas, markets, agro-industries and other development institutions for practical classes and for interaction with farmers, industrialists and development personnel to have a feel of emerging socio-economic changes and phenomena.

4. The delay in filling teaching positions at various levels are affecting teaching standards. Moreover social science positions are far less compared to other disciplines. Lack of adequate scientific positions at various levels in social sciences is discouraging meritorious students to opt for Social Sciences. Thus, there is a need to avoid delay and to create appropriate number of positions in social sciences at all levels.
5. Social science departments should be equipped with computer lab, photocopier, audio-visual aids and data bank and the students should be trained in use of these facilities.
6. The teachers should be encouraged to take up consultancy and develop rapport with corporate sector, government organisation, public sectors and NGOs which can be helpful in placement of the students in suitable jobs.
7. To provide incentive to good teachers, teaching contributions should be duly recognised in promotions, and nominations for fellowship.
8. Board of Studies/Academic Councils should have representatives of client groups/organisation and experts from outside institutions and they should be provided with some teeth to restructure and modify curriculum as per the need and to keep check on deterioration / dilution of academic standards.

Follow-up

This initiative taken by NCAP, as a joint activity with several institutions within NARS underlined the common concern in aiming for a dynamic curriculum based human resource development programme in social sciences. Follow-up action is however needed to sustain and spread such deliberations to cover the wide diversity that exists across regions and institutions.

- Organising national/regional workshops for more interactions and wider coverage of issues including under graduate and Doctorate teaching programmes.
- Formulation of specific courses in the identified frontier areas of social science.
- Developing comprehensive teaching/practical/applied instructional modules to match the demanding needs of the revised, up-dated and newly formulated courses.
- Identifying potential social science units in different regions and promoting them as Centres of excellence in specific areas of specialisation.
- Networking all social science units starting from NCAP at national level, Centres of Excellence at regional level, and SAUs at state level for promoting joint collaborative data base management, information exchange, research planning and human resource development activities.

2 Post-Graduate Curriculum in Agricultural Economics : A Synthesis

S. Selvarajan
National Centre for Agricultural Economics and Policy Research,
New Delhi- 110012.

Agricultural education, research and extension system within National Agricultural Research System (NARS) evolved amidst the single minded pursuit of achieving national food self-sufficiency goal. The relentless campaign for accelerating food grain growth to outpace population growth has been the overriding objective during this period. Socio-economic content within NARS, therefore, remained in the background. The exigency arising from two successive droughts in mid-sixties coupled with an unfavourable international food aid policy environment and expanding population growth never allowed economic and efficiency considerations to design an optimal pathway of development process. The consequent emergence of ecological, environmental, social, equity and sustainability concerns are now posing new technological, institutional and well as policy challenges for agricultural research. Agricultural research received major attention, relatively, for responding to at least certain changes during this period, followed by agricultural extension in a very limited way. Agricultural education system by and large remained ignored and static. The subject of agricultural economics, recognized as an independent discipline too remained frozen with time as social science disciplines were never accorded an equal status with other disciplines in agricultural education and research.

The curriculum

Expected role

Agricultural technology management has to consider the interdependent relationships between new and existing technologies as they are directed to meet acceptable and feasible responses by individual producers. While research, extension and farm household systems define the potential domain of technology management, service institutions and policy making bodies provide the feasible domain for improving agricultural and rural development. Agricultural economics could provide the relevant screening devices for choosing the appropriate choice and mix of technological and institutional innovations for effective agricultural technology management encompassing generation, assessment and diffusion of technologies.

The unprecedented changes in the national and global economic scenario in this decade have unfolded several new opportunities and challenges for Indian agriculture. Agricultural economics and policy research in India, thus, assumes greater significance now, than ever before. Agricultural economists have to experiment, evolve and guide innovative strategies in addressing current and emerging challenges. The curriculum in agricultural economics, should therefore, reflect the present and emerging human resource development needs.

Agricultural economics curriculum has to become : (i) *dynamic*, to capture the fast changing Indian economic scenario; (ii) *innovative*, to facilitate efficient technology management; and (iii) *futuristic*, to exploit potential career opportunities both domestically and globally. In short, the curriculum should set the agenda/pace for a quantitative and qualitative change in the role of socio-economic research in the coming decades.

Current status

1. The current over-all status of agricultural economics curriculum in NARS is highlighted in Table 1. The existing allocation of credit hours between core courses and specialised areas is compared with the recommendations of ICAR Expert committee(1980) on teaching of agricultural economics. Economic theory and quantitative methods needed more emphasis along with the specialised areas like farm management, agricultural marketing and agricultural finance. While the desirability of introducing certain uniformity in course curriculum coverage attracted divergent comments from the academicians (Rajeswari, 1992 and Rath, 1990), the fact remains that the ICAR Review committee's

recommendations remained unimplemented even after ten years. The aggregate analysis does not, however, bring out the existing variability across universities in terms of curriculum coverage.

2. The course-wise coverage in the curriculum of 12 institutions (Table 2) highlighted the existing diversity. Based on this, the

Table 1 :
Status of agricultural economics curriculum in Indian NARS

(Sidhu and Singh, 1990)

| Area of coverage | Credit hours allotted (1989)* | Credit hours recommended** |
|-------------------------------------|-------------------------------|----------------------------|
| Core courses | | |
| Economic theory | 8.50 | 9.00 |
| Quantitative methods | 10.10 | 15.00 |
| Agricultural development and policy | 3.85 | 3.00 |
| Specialisation | | |
| Farm management | 5.10 | 9.00 |
| Agricultural marketing | 5.25 | 9.00 |
| Agricultural finance | 5.10 | 9.00 |

* Average based on 22 Agricultural Universities

** Recommended by ICAR Expert Committee (1980) on teaching of agricultural economics

course-wise distribution across the selected institutions was analysed to bring out the diversity in the coverage of specialised areas in agricultural economics at masters level during 1996 (Table 3). The courses were aggregated by classifying them into different areas of specialisation. Within each area of specialisation, theory and practical credit hours under trimester and semester system was integrated for institution-wise and specialisation-wise comparison. This analysis considered all courses available for the masters programme and not the specific courses actually taken by the students. The results, therefore, represent potential and not actual coverage with the implied assumption that the emphasis will remain largely unaltered even at actual level of coverage. In 7 out of 12 institutions, farm management and production economics retained its pre-eminence by accounting for more than 20 per cent of the credit hour allocation. The area of farm management and production economics in UAS Dharwar, by virtue of emphasising more on practical oriented courses, accounted for more than half of curriculum coverage. This was largely due to the statutory mandate of SAUs to produce farm planners and extension workers (Rath, 1990) needed for accelerating the adoption and diffusion of location-specific agricultural technologies. The excessive emphasis in terms of farm management and production economics in the curricula of most of the institutions has resulted in micro-level studies with little or no integration with regional or national level macro issues. The capacity building through appropriate human resource development programme for strengthening policy analysis capacity is, therefore, crucial. There are individual institutions like YSPU wherein, shift in emphasis was observed towards areas such as natural resource economics. In case of TNAU and PDKV, agricultural finance and co-operation accounted for major share in curriculum coverage.

Table 2 :
Course-wise credit hour distribution of curriculum coverage across selected institutions, 1996

| S.No | Name of the courses | APAU | GBPUAT | HPKV | IARI | IGKV | KKV | MPKV | PDKV | TNAU | DAS | KAU | YSPU |
|------|--|------|--------|------|------|------|-----|------|------|------|-----|-----|-------|
| 1 | Micro-economic theory | 3+0 | 3+0 | 3+0 | 3+0 | 4+0 | 2+0 | 3+0 | 3+0 | 2+1 | | 2+0 | 3+0 |
| 2 | Macro-economic theory | 3+0 | 3+0 | 3+0 | 3+0 | 2+0 | 2+0 | 3+0 | 3+0 | 2+0 | 2+0 | 2+0 | 3+0 |
| 3 | Elementary econometrics | 2+1 | 2+0 | 2+1 | 3+1 | 1+1 | 1+1 | 2+1 | 2+0 | | 2+0 | 1+1 | 2+1 |
| 4 | Linear programming methods | 2+1 | 2+0 | 1+1 | 2+1 | | 1+1 | | | | 2+2 | 1+1 | 2+1 |
| 5 | Advance fishery economics | | 3+0 | | | | | | | | | | |
| 6 | Livestock economics | 1+1 | 3+0 | 2+0 | | | | | | | | | |
| 7 | Consumption economics | | 3+0 | | | | | | | | | | |
| 8 | Principles & practices of banking | | 3+0 | 5+0 | | | | | | | | | |
| 9 | Accountancy & book keeping | | 3+0 | | | | | | | | | | |
| 10 | Rural banking Institution | | 2+0 | 2+0 | | | | | | | | | 2+0 |
| 11 | Economics of development and growth | | 3+0 | 2+0 | 3+0 | 2+0 | 2+0 | 2+0 | | | 2+0 | 2+0 | 2+0 |
| 12 | Monetary & policy | | 2+0 | 5+0 | | | | 2+0 | | | | | 2+0 |
| 13 | Research methodology | 2+1 | 2+0 | 0+2 | 3+0 | 2+0 | 2+0 | 1+1 | 2+0 | 1+1 | 1+1 | 1+1 | 1+1 |
| 14 | Agricultural marketing & price analysis | | 2+0 | 3+0 | | 1+1 | 1+1 | | | 2+1 | | | 3+1 |
| 15 | Agricultural production & resource economics | 2+1 | 3+0 | 1+1 | | 2+1 | 1+1 | 1+1 | 2+1 | | 3+0 | 2+0 | 2+1 |
| 16 | Agricultural cooperation and finance | | | | | | 2+1 | 1+1 | 2+1 | 1+1 | | | 2+0 |
| 17 | Resource economics | | 3+0 | 3+0 | 3+0 | 2+0 | | 2+0 | | 1+1 | 2+0 | 2+0 | 14+12 |
| 18 | Agricultural policy | 2+1 | 3+0 | | 3+0 | 1+1 | | | | 2+0 | 2+0 | | |

| | | | | | | | | | | | | |
|----|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 37 | Agricultural cooperatives | 2+1 | 2+1 | | 3+0 | | | | | | 2+0 | |
| 38 | Capital in agriculture | | 1+1 | | | | | | | | | |
| 39 | Financing agriculture | 2+1 | 1+1 | | 3+0 | 1+1 | | 1+1 | | | 2+0 | 2+1 |
| 40 | Advanced micro-economic theory | | 3+0 | | 3+0 | | | 3+0 | | | | 3+0 |
| 41 | Advanced macro-economic theory | | 3+0 | 2+0 | 3+0 | | | 3+0 | | 2+0 | 2+0 | 3+0 |
| 42 | Advanced agricultural economics | | 2+0 | | 4+0 | | | | | 1+1 | | |
| 43 | Mathematical economics | 3+0 | 3+0 | 2+0 | | | 2+1 | | | | | |
| 44 | Operational research in agriculture-I | 2+1 | 2+1 | | 3+0 | | | | | | | |
| 45 | Operational research in agriculture-II | | 2+1 | | 2+1 | | | | | | | |
| 46 | Advanced production & resource economics | | 2+1 | | 2+1 | 2+0 | 2+1 | | 1+1 | | | 2+1 |
| 47 | Advanced farm management analysis | 2+1 | 2+1 | | | | | | | 2+1 | | 2+1 |
| 48 | Agricultural production functions | | | 1+1 | | | | | | | | |
| 49 | Farm business Management | 2+2 | | 1+1 | | | | | | | | |
| 50 | Problems of Indian agriculture and agricultural policy | 3+0 | | 2+0 | | | | 2+0 | | | | |
| 51 | Economic structure of Indian agriculture | | | | | | | 2+0 | | | 3+0 | |
| 52 | Agricultural production & marketing | | | | 2+1 | | | 1+1 | | | | |

| | | | | | | | | | | | | | |
|----|--|-----|--|--|------|--|--|-----|--|--|--|--|--|
| 53 | Agricultural production & resource economics-III | | | | 4+0 | | | 1+1 | | | | | |
| 54 | Economics of agricultural development | 3+0 | | | 3+0 | | | 2+0 | | | | | |
| 55 | Special topics in agricultural economics | | | | | | | 1+1 | | | | | |
| 56 | water resource economics | 3+0 | | | 14+0 | | | 2+0 | | | | | |
| 57 | Integrated rural development | | | | | | | 2+0 | | | | | |
| 58 | Welfare economics | | | | 3+0 | | | | | | | | |

3. The data presented in Table 3 and Table 2 was used in comparison with other available studies to assess any overall shifts or changes in curricula during the current decade. The comparison between two periods namely 1989 and 1996, in terms of major areas like economic theory, development and policy, farm management and production economics, finance, marketing and quantitative methods are shown in Fig 1. The current curriculum coverage in 1996 shows an emphatic shift with increased emphasis for farm management and production economics by 60 per cent and reduced emphasis for quantitative methods by 20 per cent as compared to the coverage existed in 1989. Shifts in other major areas of agricultural economics are only marginal.
4. The opposite direction of changes in coverage in major areas like farm management economics and quantitative methods coupled with the continued neglect of new and emerging areas like natural resource economics, international trade and marketing, agribusiness management and environmental economics underline the existing structural deficiency in the agricultural economics education system. The observed changes, emphatic or otherwise, are indeed supply-led.
5. The continued and increasing emphasis on farm management and production oriented curriculum stretching over two decades has clearly resulted in structural imbalance in the composition of human resource development within the discipline. The expertise-mix in the faculty of agricultural economics in 1989, based on the average of 22 agricultural universities (Fig 2) was reported (Sidhu and Singh, 1990) to be in favour of farm management and production economics (44 per cent) followed by agricultural marketing and price analysis (16 per cent), agricultural finance and co-operation (12 per cent), economic theory (7 per cent) and resource economics (3 per cent). Restructuring the expertise-mix in human resource development to match the emerging demands is, therefore, of immediate concern.

Table 3 :
Institution-wise coverage of major areas in agricultural economics

Per cent

| MAJOR AREAS | Institutions | | | | | | | | | | | |
|--|--------------|------------|-----------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | APAU | GBUAT | HPKV | IARI | IGKV | KKV | MPKV | PDKV | TNAU | UAS | KAU | YSPU |
| Farm management & production economics | 21.8 | 20.7 | 20.4 | 12.6 | 27.0 | 25.6 | 8.6 | 20.0 | 11.4 | 55.8 | 29.5 | 14.1 |
| Economic theory | 8.9 | 15.3 | 19.4 | 12.6 | 16.2 | 10.3 | 20.0 | 17.2 | 17.1 | 13.9 | 13.6 | 15.5 |
| Natural resource economics | | 2.7 | 5.4 | 13.4 | 5.4 | | 5.7 | | 8.6 | 4.6 | 4.5 | 25.3 |
| International trade | | 1.8 | 3.2 | 3.1 | | | 2.9 | | 2.9 | | | |
| Agricultural marketing & prices | 13.9 | 9.0 | 7.5 | 18.9 | 8.1 | 17.9 | 8.6 | 22.7 | 11.4 | | 11.4 | 9.9 |
| Agricultural finance & cooperation | 17.8 | 18.0 | 14 | 11.0 | 16.2 | 17.9 | 15.7 | 23.1 | 20.0 | | 16.0 | 15.5 |
| Econometrics | 7.9 | 4.5 | 8.6 | 11.0 | 8.1 | 7.7 | 11.4 | 5.7 | | 4.6 | 6.8 | 11.3 |
| Agricultural development & policy | 139 | 8.1 | 8.6 | 9.4 | 13.5 | 5.1 | 11.4 | 5.7 | 5.7 | 9.3 | 4.5 | |
| Research methodology | 4.0 | 1.8 | 4.3 | 2.4 | 5.4 | 5.1 | 4.3 | 5.7 | 8.6 | 7.0 | 6.8 | 4.2 |
| Mathematical economics | 3.0 | 2.7 | 5.4 | | | 10.3 | | | 11.4 | | | |
| Operational research | 5.9 | 9.9 | | 5.5 | | | 4.3 | | | | | |
| Livestock/fisheries economics | 3.0 | 5.4 | 2.1 | | | | | | | | | |
| Miscellaneous | | | 1.1 | | | | 7.1 | | 2.9 | 4.7 | 6.8 | 4.2 |
| Total credit hours* | 101 | 111 | 93 | 180 | 37 | 39 | 70 | 35 | 35 | 43 | 94 | 71 |

* The credit hours were integrated as follow : One practical credit hour is equated to two theory credit hours; one theory credit hour is equated to 12 hours under trimester system and 17 hours under semester system.

Figure 1 : Temporal shift in the emphasis on major areas of curriculum

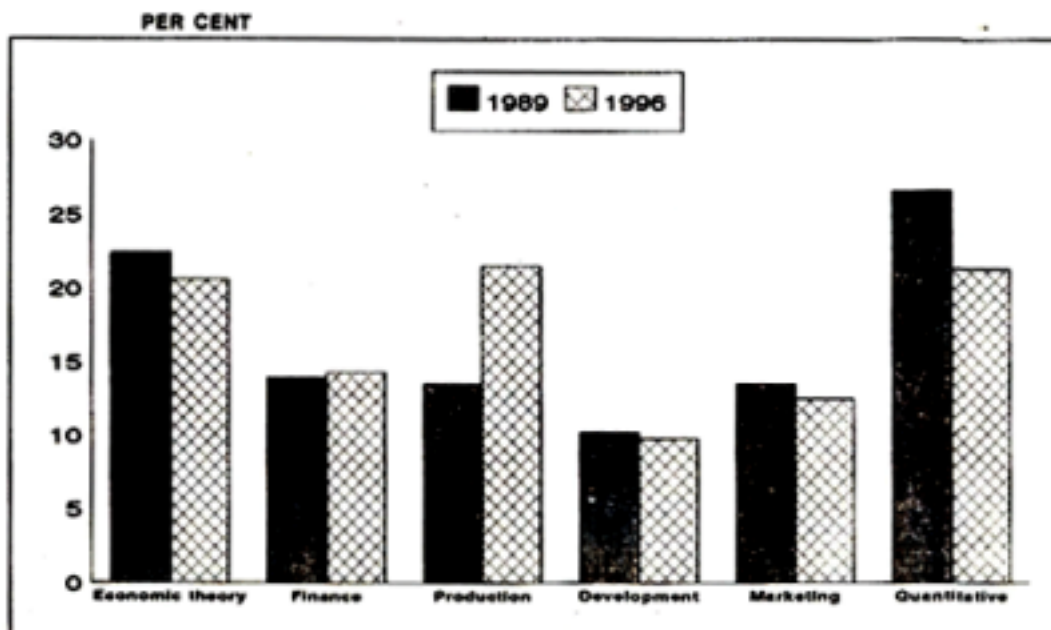
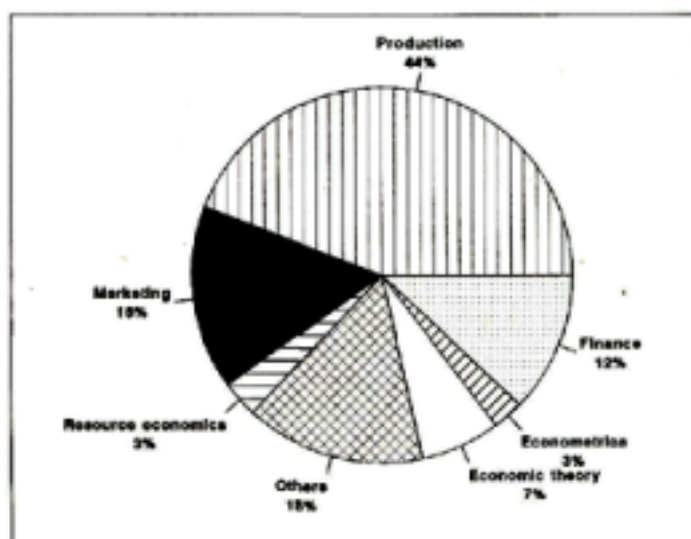


Figure 2 : Expertise-mix in the discipline of agricultural economics in 1985
(Sidhu and Singh, 1990)



What next ?

The existing curricula at the masters level is inadequate to meet new and emerging areas of socio-economic concerns in the overall agricultural technology management. Restructuring the existing curricula and introducing new areas of specialisation in agricultural economics education can no longer be ignored. A dynamic curriculum based human resource development programme is an essential pre-requisite for carving out a pro-active role for social scientists in agricultural technology management. For this the suggested strategies are as follows.

1. The existing status, reviewed in this paper underlines the need and urgency for evolving a permanent mechanism at national, institutional and divisional levels to articulate, inculcate and *ensure* dynamism in agricultural economics curriculum in response to emerging trends.
2. While restructuring the existing curricula, the approach should be to start from UG level and to cover up to Doctorate level for developing a demand based curriculum. For this, the dialogue

among the academicians, researchers and planners initiated by NCAP to address issues related to masters level needs to be continued to cover UG and Doctorate levels and further supported at national and regional levels to develop appropriate course curricula for meeting specific specialisation needs in the identified areas of specialisation.

3. The council should give a one time grant to all SAU social science units to develop physical facilities for providing quantitative analytical support to both education and research.
4. Existing expertise-mix in agricultural economics discipline is inadequate to meet the current and emerging areas of socio-economic concerns in the overall agricultural technology management. Regional centres of excellence for specific areas of specialisation are needed to be developed for promoting diversified expertise-mix among the teaching faculty in agricultural economics discipline. Regional, National and International training is to be planned for teaching faculty to acquire expertise in new areas like natural resources economics, environmental economics, trade and agri-business management.

References

Sidhu, D.S. and A.J. Singh (1990). "Teaching of Agricultural Economics in Agricultural Universities in India", *Indian Journal of Agricultural Economics*, Vol. 45, No. 1, January-March.

Rath, Nilakantha (1990). "Teaching of Agricultural Economics: Report on Discussion", *Indian Journal of Agricultural Economics*, Vol. 45, No. 1, January-March.

Rajeswari, S (1992). "Teaching of Agricultural Economics in Agricultural Universities in India: A Comment", *Indian Journal of Agricultural Economics*, Vol. 47, No. 1, January-March.

3 Post-Graduate Curriculum in Agricultural Extension - A Synthesis

Rasheed Sulalman V
National Centre for Agricultural Economics and Policy Research,
New Delhi- 110012.

The origin of extension education in India could be traced back to food crisis (Singh and Vijayaraghavan, 1995) which was planned to be tackled through the adoption of improved technology. Extension training in an organised form came into existence as part of Community Development programme started early in fifties. Extension education concept was new to many at that time and a bit difficult to dis-entangle from extension *per se* (Gautam, 1981). Extension education became a subject at the undergraduate curriculum in agricultural colleges in the 1950s. Bihar Agriculture College was the first to adopt this in 1953. Broadly extension education meant education and training in philosophy and methodology of extension. "The discipline of extension education gradually gained importance and consequently got introduced in other courses such as Veterinary, Home science etc, by 1960" (Yadava, 1981).

The first M.Sc programme in extension education was also started at Bihar Agricultural College in 1955, to be followed by Jabalpur Agriculture College in the year 1957. Since then most of the agricultural universities have created facilities for the post-graduate instruction in the subject of extension education. IARI was the first to initiate a doctorate programme in this subject in 1958. The history of extension education as a discipline is thus relatively short. During this period, it had to fight hard for its existence and recognition as a science and as a post graduate discipline. Post-graduate programme in extension was even discontinued for some time in few universities in the 60's.

Faster spread of this discipline to meet the increasing demands of teaching departments of agricultural colleges that grew rapidly in the 50's and 60's adversely affected the quality of its content. "The subject in fact, had not established its roots on sound foundation, when course outline and quality of teaching became a topic of concern. In 1967 a seminar was organised at IARI where model syllabus for under-graduate courses was recommended. Nothing significant was done for post-graduate courses". (Singh, 1981). A national seminar on "Orientation of extension education curriculum and strengthening functional linkages" organised at CSAUAT, Kanpur in 1981 was, perhaps, the first attempt that took stock of the post-graduate curricula and suggested various modifications.

Table 1 : Subject matter coverage in Masters level extension curricula in 12 universities

| Subject Areas | APAU | AU | CSAUAT | IARI | IGKV | JNKV | KAU | OUAT | PAU | PDKV | TNAU | TNVASU |
|--|-------------|---------|---------|---------|---------|-------------|-------------|-------------|-------------|---------|-------------|-------------|
| Extension Education Fundamentals (Concepts, objectives, principles) | Not Covered | Covered | Covered | Covered | Covered | Not Covered | Not Covered | Not Covered | Not Covered | Covered | Not Covered | Not Covered |
| Rural Development Programmes | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered |
| Programme Planning & Evaluation | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered |
| Diffusion & adoption of Innovations | Covered | Covered | Covered | Covered | Covered | Not Covered | Covered | Covered | Covered | Covered | Covered | Covered |
| Group Dynamics | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered |
| Leadership | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered |
| Rural Youth | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered |
| Communication Fundamentals (models, types, elements etc.) | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered |
| Extension Methods | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered |
| Audio-visual Aids | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered |
| Photography | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered |
| Agri. Journalism | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered |

| Subject Areas | APAU | AU | CSAUAT | IARI | IGKV | JNKV | KAU | OUAT | PAU | PDKV | TNAU | TNVASU |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Information Management | Not Covered | Covered | Not Covered | Not Covered | Not Covered | Not Covered | Not Covered | Not Covered | Not Covered | Not Covered | Covered | Not Covered |
| Training/HRD Fundamentals (Models, Strategies etc.) | Covered | Covered | Covered | Not Covered | Covered | Not Covered | Covered | Covered | Covered | Covered | Covered | Covered |
| Administration/Management Fundamentals | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered |
| Research Methodology Research Designs, Data collection techniques etc. | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered |
| Sociology & Psychology Concepts in Sociology | Covered | Not Covered | Covered | Covered | Covered | Covered | Covered | Not Covered | Not Covered | Covered | Not Covered | Covered |
| Concepts in Psychology | Covered | Not Covered | Covered | Covered | Not Covered | Covered | Covered | Covered | Covered | Covered | Not Covered | Covered |
| Educational Psychology (Basic concepts & Principles, in teaching-learning) | Covered | Not Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Not Covered | Covered |
| Social change | Covered | Not Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Covered | Not Covered | Covered |

Not Covered in the curricula
 Covered in the curricula but should be restricted to the UG level
 Covered in the curricula
 Covered in the curricula but more than 50 of it should be restricted to the UG level

The National Workshop on Post-Graduate Teaching in Social Sciences organised at NCAP in 1996 dealt in detail the curricula needs, research training and area specialisation in agricultural extension. This workshop found the curricula followed at the masters level "insufficient" in view of the changing job scenario and "lacking in competencies" to tackle the emerging professional needs and challenges. The workshop also identified the critical gaps in the curricula at masters level and recommended a thorough revision of the entire curriculum for introducing these changes.

It would be appropriate to analyse the masters level curricula followed by various universities at present to understand their composition. The existing M.Sc curriculum in extension (agricultural extension / extension education/ veterinary extension/ dairy extension) from 12 universities in the country forms the basis of this analysis. Table 1 shows the subject matter covered at masters level in the 12 universities in the country.

Some of the salient features that emerge from Table 1 are as follows.

Repetition of the UG curricula

Many of the topics that appear in the M.Sc curricula are repetitions of what is already covered or should have been ideally covered in the UG curriculum in Agriculture. For example almost all the topics covered in the course outline under fundamentals of extension education, rural development programmes, extension methods, audio-visual aids, introduction to sociology and psychology, and concepts of educational psychology and more than 50 per cent of what is included under programme planning, fundamentals of communication and diffusion and adoption of innovation are all repetitions of what is already there in the UG curricula of many of the universities (APAU, OUAT, HPKV, UAS, KAU, TNAU, etc.). A comparison of the course contents of the above courses at the UG and PG levels differ only marginally. Moreover these areas occupy about 50 per cent of the course content at the M.Sc level.

This could also be one of the reasons for non-inclusion of the major developments in extension in the curricula.

Table 2 shows the courses in agricultural extension in UG curriculum prescribed by the second and third Deans' Committees constituted by ICAR.

Table 2 :
UG courses in extension prescribed by the second and third Deans' Committee for B.Sc Agriculture programme

| Course Title | Credit Hours | |
|--|--------------|----------|
| | Trimester | Semester |
| Second Deans' Committee | | |
| Fundamentals of extension education and community development | (2+0) | (1+0) |
| Communication of agricultural technology and extension methods | (2+0) | (1+0) |
| Extension programme planning and evaluation | (2+0) | (1+0) |
| Extension field practicals | (0+3) | (0+2) |
| Third Deans' committee | | |
| Rural sociology and educational psychology | | (1+1) |
| Fundamentals of extension education and rural development | | (2+1) |
| Communication and diffusion of agricultural innovations | | (2+1) |

Source: 1. ICAR (1981), Undergraduate Education in Agricultural Universities in India, Report by Committee of Deans, Indian Council of Agricultural Research, New Delhi.
2. ICAR (1995), Report of Third Deans' Committee on Agricultural Education in India, Indian Council of Agricultural Research, New Delhi.

This indicates the need for providing understanding of the fundamentals in these areas at the undergraduate level itself. It is very much essential for a graduate in agricultural sciences for performing his job at the field level.

Probably this could be the reason for the valid criticism of many that "post-graduates in extension education have no distinctive qualification to make him distinct to those who have no advanced training in extension education. Despite 30 years of its history, this discipline has no occupation exclusively meant for it" (Singh, 1981). The situation remains more or less the same even now.

It was also observed that the extension content at the UG level are less in programmes such as veterinary, fisheries etc even within the same university compared to agriculture. This difference is also visible in the credit allocation and courses in the Third Deans' committee report (Credit hours allotted for extension is eight in Agriculture, six in Forestry, four in Veterinary and four in Fisheries). Other than differences in orientation with respect to each fields, there is no reason for a change in minimum course content (including credit loads) at UG level in these fields as these graduates are expected to perform field extension jobs. "The minimum course contents that should be taught at UG level in every faculty thus needs to be identified" (Shukla and Kumar, 1995).

Lack of focus

As seen from Table 1, a post-graduate in extension would be taking courses from almost all these areas. He has not much choice considering the limited number of courses and the minimum credit hours within the discipline he has to cover in his programme. Thus he would be learning the fundamentals (mostly theory) of extension education, programme planning, extension methods, audio-visuals, training, sociology, psychology, leadership etc without developing expertise in any of these fields. Lack of a clear focus in the M.Sc curricula could be due to the static nature of the curriculum and also due to lack of a clear perception on the nature of skills needed to tackle the emerging professional needs and challenges.

The NCAP Workshop found the development of following competencies as essential for an M.Sc in agricultural extension.

i) Participatory extension methodologies, ii) Programme development, iii) Monitoring and evaluation, iv) Modern communication and instructional technologies, v) Media production, vi) Application of computers in extension, vii) Management of extension organisations, viii) Human resource management, ix) Modern training methods, x) Experiential learning methods, xi) Organisation and management of NGOs and xii) Entrepreneurship development The present day curricula is too inadequate to provide any of these skills. These capabilities could be provided only if a thorough revision is done by restricting the fundamentals to the UG curriculum and by bringing a newer orientation based on the professional demands and necessary skills.

Absence of specialisation

The present curricula do not provide scope for any specialisation. Need for specialisation within the discipline was realised at least 15 years back but nothing was done to achieve it. The 1981 seminar on extension curricula has recommended for providing specialisation within the discipline in a way that the product may fit in for specialised job of say, mass media production, public relation and journalism. Sandhu (1981) suggested specialisations in farmers' education and training, communication, extension teaching methods and audio visual technology, youth education training and club work, extension personnel development and administration and programme planing and execution. Some of these areas may not be relevant today. But no serious attempt to design courses to provide specialisation in distinct areas has been made yet. The NCAP Workshop identified three major areas of specialisation to be offered within extension education. They are :

1. Extension management
2. Development communication
3. Human resource management and training

The weightage given at present in the curriculum under various broad areas is given in Table 3. Extension/Extension management covers on an average 33 per cent of the total credit load at present.

Figure 1 : Average credit hour allocation in percentage under different subject areas in M.Sc. Extension curricula.

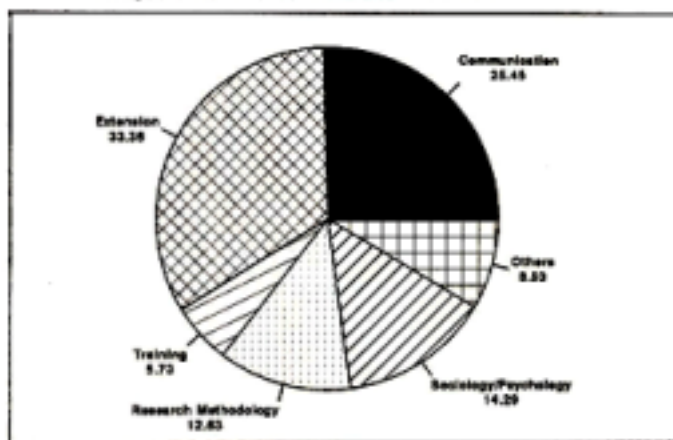


Table 3 :
Credit hour allocation in percentage under different subject-areas in M.Sc curricula

| Subject Areas | APAU | AU | CSAUAT | IARI | IGKV | JNKV | KAU | OUAT | PAU | PDKV | TNAU | TNVASU |
|--|-----------|-----------|-----------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Extension/Extension Management | 30.4 | 42.5 | 46.7 | 34.9 | 27.0 | 30.0 | 17.5 | 33.9 | 24.4 | 38.8 | 36.8 | 36.7 |
| Communication/ Development Communication | 28.3 | 22.5 | 15.5 | 34.4 | 32.4 | 20.0 | 32.5 | 25.4 | 34.1 | 16.3 | 23.7 | 26.7 |
| Training/Human Resources Management | 6.5 | 7.5 | 4.4 | 0 | 5.4 | 0 | 10.0 | 6.8 | 9.7 | 6.1 | 7.9 | 3.3 |
| Research Methodology | 8.7 | 17.5 | 11.1 | 9.3 | 8.1 | 10.0 | 15.0 | 11.9 | 9.7 | 16.3 | 21.1 | 13.3 |
| Sociology/ Psychology/ Educational Psychology/ Social change | 13.0 | 0 | 22.2 | 13.8 | 24.3 | 30.0 | 12.5 | 6.8 | 12.2 | 16.3 | 0 | 13.3 |
| Others | 13.0 | 10 | 0 | 6.9 | 2.7 | 10.0 | 12.5 | 11.9 | 9.7 | 6.1 | 10.5 | 6.7 |
| Total credit (hours) | 46 | 40 | 45 | 30.33 | 37 | 50 | 40 | 59 | 41 | 49 | 38 | 30 |

Notes:

1. One credit for practical is considered as two credit hours while calculating the total credit hours.
2. Credits in the trimester system are converted to semester equivalents
3. Other include areas in group dynamics, leadership, rural youth etc.

The need for specialisation is perhaps more acute now than ever before. The changing job markets for extension demand professional extension managers (not extension workers), media planners

/communication experts (not audio-visual operators or communicators) and HRD managers / training specialists (not training organisers).

The nature of skills that are needed under such a scenario are given in Table 4.

Table 4 shows only some of the skills exclusively essential for the three streams of specialisation. Some of the above skills and understanding are probably essential for more than one area of specialisation. All these areas need exposure to social science research methodology; statistical methods; knowledge in use of computers for information and data management; and an agricultural systems perspective (structure and functions of research, extension, development and policy systems). Relevant inputs for the three streams of specialisation from the related social sciences such as sociology, psychology, anthropology etc should be a part of the curricula. Such inputs could be provided better through developing integrated composite courses to be handled by specialists in different areas than through courses in individual disciplines. Prescription in terms of core, electives, major or minor is deliberately avoided here as this requires a group effort.

Developing a relevant curricula

Developing specific courses and appropriate teaching methodologies within these broad areas is a heavy task as one has to design this within the limited credit load available. A total restructuring could be possible only if the present and future professional demands are kept in the forefront. Courses that could provide some of the skills identified above are available in few departments but are presently restricted to Ph.D programme in the name of advanced courses. Most of them probably have to be brought under the curricula at masters level.

It should be borne in mind that the training at masters level is not meant for developing a better field extension functionary. A graduate in agriculture or its allied sciences would suit that requirement. A graduate in agriculture is expected to acquire necessary background in technology in the UG programme. Moreover the masters level training is not meant for increasing understanding of technology.

Table 4 :
Nature of understanding and competency exclusively needed for each area of specialisation

| Broad area of specialisation | Nature of understanding and competency required |
|-------------------------------------|---|
| Extension management | Building and sustaining organisations; need assessment, paradigm shifts in rural development; planning and implementing development programmes; optimum utilisation of human and technological resources in programme implementation; technology evaluation, management techniques in planning; monitoring; and evaluating projects, using the results of monitoring to modify and change programme directions, emerging institutional changes in transfer of technology, participatory extension methodologies, information management and MIS, research in extension management |
| Development communication | Communication technology and media materials, media planning, production of different projected and non-projected media, participatory message design and development, evaluation of communication media for effectiveness (outreach and expected results) and cost, techniques of photography and its application in scientific presentation and extension, developing agricultural communication projects, designing visuals for print and TV/video media, agricultural journalism development communication research areas, approaches and methodologies |
| Human resource management/ training | Strategies in Human Resource Development (HRD); organisational behaviour and group dynamics; types of extension organisations; strategies for organisational effectiveness in extension organisations; entrepreneurship development; preparation of HRD plans for extension organisations, experiential learning methods training - needs assessment, methods, and evaluation; designing effective training programmes; Information systems for human resource management |

Suggestions to increase subject matter inputs (courses in agronomy, entomology, pathology etc) by way of minors (Prasad 1978, 1995) should not be accepted as extension post-graduates are not competing with the subject matter specialists in state departments of Agriculture and agricultural research system. In state departments of agriculture, extension post-graduates could be more useful in planning and programme implementation wings, farm information bureaus/ communication centres, training institutions etc. They also have to meet the demands for such positions in agricultural universities and should be able to handle UG level courses in extension. Positions such as project managers, training specialists, and communication specialists are in demand in semi-government institutions, private sector and NGOs involved in agricultural and rural development. These are also the sectors that will absorb more extension professionals in future.

For all research and PG teaching positions, a doctorate in the concerned field of specialisation should be made essential. Ph.D level training needs a different orientation as it is meant for positions in academic and research career. "The Ph.D programme essentially has to have a heavy extension and research methodology overloads" (Singh, 1981). This paper deals with only the masters level training.

Conclusions and policy implications

The curricula being followed at the masters level is not relevant to meet the present and future challenges in extension. Measures for developing a uniform and relevant curricula have to be taken at the earliest. This would require a total restructuring of the existing curricula. New developments in different areas of specialisation in extension education have to be introduced in the curriculum. For this the following measures are essential.

1. Areas in extension education recommended for UG curricula in extension education should be restricted at that level. Avoiding this duplication at the PG level would provide more space for introducing the newer developments in the curricula.
2. Credit hours presently allotted for outside minors for subject matter knowledge in agronomy, horticulture, plant protection etc. should have to be totally withdrawn. Some of the courses presently restricted to Ph.D programme could be included for masters level.
3. A core group has to be set up at the national level to formulate a uniform curricula at the masters level. Three sub-groups for each area of specialisation (extension management; development communication; and human resource management and training) have to be formed with specialists in these fields.

References

- Gautam, O.P. 1981. "Orientation of extension education curriculum to emerging needs of agricultural development", *Journal of Rural Extension*, VIII (1 & 2), 5-7.
- ICAR, 1981. Under-graduate education in agricultural universities in India, Report by committee of Deans, Indian Council of Agricultural Research, New Delhi.
- ICAR, 1995. Report of Third Deans Committee on agricultural education in India, Indian Council of Agricultural Research, New Delhi.
- Prasad, C. 1978. Agricultural extension and change agents; Some new guidelines, Circulated to all agricultural universities for Comments and action, Indian Council of Agricultural Research, New Delhi.
- Prasad, C. 1981. Employment Planning and opportunities for agricultural scientists in extension education, Souvenir, National Workshop on Manpower Development in Extension Education for meeting Future challenges of Agriculture, NAARM, Hyderabad, February 13-16, 1995.
- Singh Y. P. 1981. "On building an extension curriculum at masters level", *Journal of Rural Extension*, VIII (1 & 2), 8-14.
- Sandhu, N.S. 1981. "Orientation of post-graduate academic curriculum of extension education in Indian agricultural universities" *Journal of Rural Extension*, VIII (1 & 2), 15-21.

Shukla, A.N. and Kumar, K. 1995. Restructuring under-graduate curriculum in extension education for manpower development for meeting future challenges of agriculture, Paper presented at the National Workshop on Manpower Development in Extension Education for meeting Future challenges of Agriculture, NAARM, Hyderabad, February 13-16, 1995.

Singh T.P. 1981. "Extension education-in search of new direction" *Journal of Rural Extension*, VIII (1 & 2), 25-27.

Singh Y.P and Vijayaraghavan K 1995. Extension Education beyond 2000. Paper presented at the Workshop on Planning Education beyond 200, National Academy of Agricultural Sciences, 13-14 October, 1995.

Yadava, J.P. 1981. "Present and proposed curriculum in agricultural extension". *Journal of Rural Extension*, VIII (1 & 2).

4 Post-Graduate Education in Agricultural Economics - Experience of TNAU

S. Krishnamoorthy
Department of Agricultural Economics, Tamil Nadu Agricultural University,
Coimbatore-641 003.

Introduction

Accelerated development in agricultural research with the help of ICAR and SAUs has opened up new vistas of agricultural growth and development during late 60s and 70s. This has created enormous potential for transforming the traditional agriculture into a dynamic and scientific oriented one. The challenges of 80s centred around identification of alternate approaches for optimum management of resources and technology to accomplish basic national objectives of output expansion, employment generation, greater equity in respect of distribution of income, access to resources, rural development and overall welfare. Far reaching policy changes were introduced in India during Nineties with radical macro economic stabilisation measures and a structural adjustment programme with a view to liberalising the economy and integrating it with the world economy. The new policies are likely to have strong impact on agricultural output, price, employment and technology.

For orderly development of agricultural and economic development in the coming decades, the agricultural economists have a greater role to play. Expertise in the frontier areas of natural resource economics, marketing and international trade, development policy, computer applications, model building, management information system, Environmental economics, agri-business and managerial economics.

Status

To develop scientific manpower in agricultural economics, a separate Department of Agricultural Economics was established at TNAU in 1962. Besides offering under-graduate courses in agricultural economics, a separate post-graduate programme leading to M.Sc (Ag) was started in 1962. Ph.D programme in agricultural economics was started in 1967. To meet the challenges of second generation problems, resulted due to green revolution, in terms of input marketing and product disposal, M.Sc (Ag) in Agricultural Marketing Management was initiated in 1981. To develop the manpower for managing agriculture on business line, Master of Business Management was started from 1988.

Capacity building and our strength

Several faculty members of this department had their Ph.D and postdoctoral training from various US universities. Collaborative research projects with international and national institutions have also enriched the research capabilities of this department. The areas of research covered farm management, growth linkage, micro-level planning, resource management, rural women, rural employment, agricultural credit, agro-forestry, land use planning, agricultural marketing' price analysis and regional development.

In recent years, the expectation from this department has been on the increase from the government, public sector firms and private institutions. This situation calls for upgrading human resource in the field of agricultural economics.

Centre of excellence

Several Centres of excellence have to be established by the ICAR, catering to the requirements of 28 SAUs across the country. In addition to IARI, atleast three more Centres

of excellence need to be established, to start with, one in the west, one in the east and one in the south. These advanced centres have to be well equipped with ICAR funding.

- These institutions have to allocate 25 per cent of the seats outside the state at masters level.
- Capacity building of the staff of the Centre has to be taken up by ICAR, by deputing the scientists abroad for training in frontier areas of agricultural economics, such as natural resource economics, environmental economics, international trade, development and policy and agri-business management.
- These Centres with their expertise should give orientation programmes on specialised areas for a period of three months.
- The Centres should be well equipped with good information management system and library.
- These centres should have collaborative research with other universities on areas of common interest.
- The Centre of excellence should also encourage industry - institution linkages for resource mobilisation.

In this context, it is proposed that the Department of Agricultural Economics, TNAU could be made as a Centre of Excellence in the coming year. In the course of time, additional Centres should be thought of in other SAUs as well.

Issues for discussion

- The existing staff in the University are committed to meet the requirement of teaching (UG and PG), research and extension activities. Can ICAR decide the cadre strength of Department of Agricultural Economics in SAUs? It has to be made mandatory that the PG programme should be started only when they have adequate trained manpower. To get over the problem, can we think of restricting the PG programme in one or two campuses, rather than extending the programme in all the campuses with inadequate infrastructure facilities.
- Specialisation calls for more number of staff members. Till recently, there has been a great demand for natural resource and environmental economics at Ph.D level. The preference is expected to go for trade and development in the near future on account of expanding export oriented agri-business activities. Strong opinion persists for providing specialisation opportunities at Ph.D level to cope with the challenges facing the economy. So is it not rational to limit specialisation at Ph.D level than at masters level, given the resource constraints of SAUs?
- Still many departments do not have adequate computer facilities and there is also problem of expertise in training students in computer applications. Is it not necessary to update periodically the computer versions with advancements in the field of computer science? Similarly, it is not uncommon in the SAUs that this department gets the minimum allocation of funds for subscribing national and international journals and for procuring latest books.
- Inadequate practical orientation in the courses needs to be addressed. Can we think of a common syllabus for the courses offered at masters level, which should be periodically updated at national workshops? Such a common curriculum will encourage mobility of students among universities at Ph.D level.
- At masters programme, students from different faculties such as agriculture, horticulture, fisheries, forestry, agricultural engineering and veterinary sciences are admitted. The paradox is that the exposure to different facets of economics vary among disciplines, and it has its own implications on students' capability at post-graduate level. How are we going to reconcile this issue? Whether organising a common masters programme in agricultural economics for all the disciplines or starting separate masters programme in agricultural economics for different disciplines would be relevant?

5 Post-Graduate Teaching in Agricultural Economics

L. R. Singh

G. B. Pant University of Agriculture and Technology, Pantnagar,
Uttar Pradesh-263145.

The post-graduate teaching in agricultural economics in the G.B. Pant University of Agriculture and Technology started in 1963 with masters programme. The programme was expanded to Ph.D level in 1970 and diversified to rural banking at masters level in 1976.

The post-graduate training involves teaching advanced courses and thesis research. While at masters level, two-third weightage is given to courses and one third to the thesis research, at Ph.D level an equal weightage is given to both. The course requirement at the postgraduate level is divided into four components viz. basic supporting courses, core courses, open electives and minor package.

The post-graduate programmes developed by the department are maintaining a fair balance between economic theory, quantitative techniques and applied economics. At masters level the specialisation is through thesis research. However, at Ph.D level the specialisation is through open electives as well as thesis research. The areas of specialisation available in the department are : Farm management and production economics; Agricultural marketing and price analysis; Agribusiness management; Agricultural finance; Rural banking; Resource economics, Agricultural planning; and Rural development.

One important constraint we experience is the lack of computer facility for practicals in the department.

Suggestions

1. NCAP should act as a nodal agency for arranging national and international refresher courses in agricultural economics.
2. A suitable teacher - rating cum reward system ought to be developed with emphasis on qualitative parameters of teaching.
3. NCAP should take the lead for strengthening agricultural economics teaching and research within NARS.

6 Current Status and Suggested Reorientation in the Curriculum for Masters Degree in Agricultural Economics

V. K. Pandey

Department of Agricultural Economics, G. B. Pant University of Agriculture and Technology, Pantnagar, Uttar Pradesh-263145.

Introduction

The curriculum for a professional degree programme is largely guided by the job market opportunities. Besides teaching, the role of agricultural economists was initially confined mainly to conducting socio-economic studies and serving in the state agricultural marketing functions. However, with the techno-economic developments in agriculture during sixties and onwards, their demand expanded especially in the following avenues :

- i. Socio-economic studies, both problem oriented as well as policy-planning ;
- ii. Technology evaluation, largely concurrent and *ex-post* evaluation;
- iii. Agricultural financing by the institutional sector; and
- iv. Agricultural marketing, particularly of agricultural inputs by the corporate sector.

Curricula

To cope with the then emerging needs in the job market, a comprehensive review of PG teaching in agricultural economics was undertaken during late sixties and early seventies in the SAUs and ICAR institutes. Accordingly, a composite package of courses in mathematics and statistics, economic theory, quantitative methods and those dealing with the analysis of production, marketing, finance and development in agricultural sector together with research training through thesis work were designed and adopted. This served quite well the need for trained manpower in the discipline during seventies and early eighties.

However, there remained one lacuna in this revised PG curriculum that it remained lopsided with more emphasis on micro-economic analysis and less on macro-economic aspects. Hence, the policy-planning aspects of agricultural development remained largely dominated by the pure economists. The then revised and still presently followed curriculum is so tight with mathematics, statistics, economic theory, quantitative methods, various sub-disciplines within agricultural economics and thesis work and there is little room for any more addition. In fact, the techno-economic developments in agriculture during that period generated an urgent need and pressure for area specific micro-economic studies of farmers and agricultural markets with regard to the problems relating to production, technology adoption, input use, financial needs, marketing and infrastructural requirements. Also, the overall environment in SAUs and ICAR institutes was more technology and farmer oriented. Even the banks and corporate sector were initially enthralled with the farmer oriented approach. As a result, a heavy emphasis on micro-economic aspects in the PG curriculum in agricultural economics was provided.

Issues

The job market has now changed considerably from mid eighties on several accounts. *First*, the momentum in expansion of institutional finance to agriculture and the associated spurt in job opportunities have more or less reached the level of a normal pace. *Second*, the avenue of input marketing in the corporate sector has become dominated by the marketing management professionals. *Third*, the improper use and resultant degradation in natural

resources and environment are posing severe constraints not only to agricultural growth but also to overall economic development. Hence, the management of natural resources has now assumed great significance in agricultural research and development. *Fourth*, the recent economic reforms aiming at liberalisation and globalisation of the economy are generating compulsions for agriculture to move from the domain of subsistence farming to value addition and export earning. While some of the above changes have shrunk boundaries, the others have opened new frontiers for agricultural economists. But, these new frontiers require some reorientation in their training programme.

Changes required

In fact, a good deal of familiarity with computers and development of management orientation have now become essential for professional economist. Hence, provision for adequate training in these two areas need to be incorporated in the curriculum at masters level. To accommodate for these additions, some of the present courses will have to be made more compact. Probably a course each in mathematics, statistics, micro-economics and macro-economics which together make a full semester load need to be retained.

Courses such as quantitative methods, production economics, agricultural finance, marketing and price analysis, and development planning and policy have to be developed as an integrated set for one full semester. Then, a set of courses, including one in computer applications in social sciences, equivalent to a full semester load in any one of the following management areas of specialisation : (i) natural resources management, (ii) agri-export management, and (iii) agri-business management need to be introduced. This will mean addition of specialisation in any one area and reorienting research training towards business propositions at the masters degree level.

This package would also require a well motivated faculty whose dedication and reputation can help in establishing the brand. But to make good faculty perform well, the Departments of Agricultural Economics will have to be strengthened in three ways. *First*, the physical support through all the modern equipment and gadgets such as personal computers, electronic typewriters, photocopiers, fax and electronic mail will be needed. *Second*, the cultural support will have to be strengthened through free and frequent interactions of the faculty with their other counterparts in the country, concerned industrial firms and government agencies, and participation in outside seminars. *Third*, an informatics support through a well coordinated (internet type) data bank will be needed. And, of course, the financial support to provide and maintain all the above mentioned facilities will be required in adequate measure.

To begin with, five or six regional centres may be identified for these programmes. As resources develop and job market responds favourably, more centres can be taken up. In fact, later it may become self-sustainable to allow expansion in other centres. Initially, it has to be made rigorous in terms of quality and, hence, provided 'with adequate support. Further, instead of leaving it to the individual efforts of each centre, a co-ordinated approach to faculty improvement, curriculum development, data bank establishment and liaison with prospective employees would be better in early stages. Establishing regional data banks need coordinated efforts. ICAR should extend full financial support to this endeavour.

7 Teaching of Agricultural Economics at Masters Level - Issues for discussion

S. Suryaprakash

**Department of Agricultural Economics, University of Agricultural Sciences,
Bangalore-560065.**

Introduction

The post-graduate teaching in agricultural economics is at masters and the doctoral levels. The courses at the masters level are designed (a) to upgrade and impart specialised higher knowledge in agricultural economics to complement that obtained by the students at the degree level; and (b) to equip them to conduct research. As part of the PG programme, the students are offered a few introductory courses followed by the specialised courses in farm management, agricultural finance and agricultural marketing.

The course curriculum

The complement of courses at masters level are designed to enhance the knowledge acquired at the degree level. These include farm management, agricultural marketing, agricultural financial management, etc. The second part aims at introducing the students to the principles of economic theory and development. The third part covers new areas like production economics, price analysis and resource economics. Finally, the students are exposed to quantitative methods through the courses on econometrics, mathematical economics and research methodologies in social sciences.

In short the course design at M.Sc level is drawn up with an objective of imparting knowledge in all the major areas of the subject of agricultural economics and to equip the students to initiate research in a chosen area to develop their competitive ability in the employment markets in related fields. To that extent, the student is made a generalist in agricultural economics after the first year of course work ready to branch out into any of the specialised areas of research for further academic pursuits.

Inadequacies in course contents

The inadequacies of the subject matter coverage, if any, mainly emerge out of : (a) the dynamic nature of social, economic and institutional phenomenon; (b) lack of provision for periodic revisions to incorporate frequent changes in the syllabus; and (c) non-exposure of teachers to the advancements in the subject.

The organisation of summer courses and training programmes for teaching staff are few and far between. Again, these facilities are not always available to the teacher due to shrinking budgetary provisions towards such programmes and because of other administrative constraints. Non-availability of adequate funds for the acquisition of latest books and journals is another dimension to the problem. The social, economic and institutional situation is so dynamic, especially in the recent past, that the teacher is left behind unless some built-in institutional arrangements are made for periodic upgradation of his knowledge horizons. The changes such as economic liberalisation and its influence on the rural economy call for a thorough reorientation of the subject matter taught to the student. This naturally calls for subject matter coverage in areas like labour economics, trade (input and output), management, fishery and forest economics and natural resource economics. There is also a need to cover areas of sustainability, externalities and agricultural policy, which are not adequately covered in the present programme. The rigid norms of syllabus revision provide little scope for their inclusion thereby denying exposure on these aspects.

The students also need to be exposed to the emerging world economic scenario with particular reference to India. Hence, the scope for specialisation in a particular area of the subject at M.Sc level becomes very much limited. But, there is certainly some scope under research training to equip the student in problem solving techniques and improve his logical thinking in formulation and presentation of research projects in his area of interest.

Some of the lacunae in the current curriculum as perceived by students and teachers of the faculty are listed here :

- i. The present coverage of courses in economic theory are inadequate and the students need to be provided a much stronger theoretical base which is most crucial for further academic and research work in the subject.
- ii. There is relatively less emphasis on practicals component which hamper the student's ability to understand, appreciate and apply the theoretical aspects more meaningfully in their research projects.
- iii. Insufficient audio-visual, computing and transport facilities have been a serious constraint in planning for intensive practical oriented training at the PG level.

Suggestions for improvement

The following measures are suggested to overcome the identified constraints in PG teaching and make the programme more effective.

- i. Equipping the teacher with expertise in the frontier areas of the subject through frequent participation in summer courses, training programmes and workshops (which can be conveniently organised periodically, at regional level).
- ii. Inclusion of more practical assignments in the M.Sc course curriculum on the following aspects : (a) resource use planning both at micro and macro level with respect to different agroclimatic and ' socio-economic conditions; (b) agri-business management; (c) international trade; and (d) agricultural and natural resource use policy.
- iii. Provisions for frequent and appropriate changes in the syllabi by formulating subject matter revision committees that could meet atleast once in a year before the start of the academic year.
- iv. Sufficient budgetary provisions for books, journals and computing facilities.

8 Need for Agri-Business Management Programme in State Agricultural Universities

P. G. Chengappa
Department of Agricultural Marketing and Co-operation, University of Agricultural Sciences,
Bangalore-560065.

Introduction

Commercialisation of agriculture calls for specialised production, post-harvest management, expansion of processing, transportation and packaging activities and positioning of products both in domestic and international markets. The need for agri-business management (ABM) programmes both at under-graduate and post-graduate levels has become important. Now, agri-business is taught as a separate course in most of the SAUs at the under-graduate level in various degree programmes.

Agri-business management

The concept of agribusiness denotes the activities of agricultural sector integrated in terms of production, processing, marketing and shipments (exports/imports) under different organisational networks. Agri-business thus explores production, marketing and trading of products related to agriculture. It also covers improved growing techniques, agricultural machinery, fertilizer, pesticides pre- and post- harvest handling, storage, transportation, packaging and labelling. Critical management issues as financing and technical assistance, preparation of products for exports, overseas marketing issues and government policy will also receive attention in agri-business management.

Scope

There is no doubt that the agri-business activities are on the increase. The liberalisation policies of the Government and the establishment of WTO have created more opportunities for globalising our agriculture.

There are clear indications that certain sectors such as floriculture, aquaculture, poultry, processing of fruits and vegetables are reaping the benefits of advanced technology. The entrepreneurs or organisation engaged in such ventures are on the look for competent and trained agribusiness managers. But, who can provide them the required manpower? Obviously, the SAUs should take a lead in this direction. The Indian Institutes of Management (IIM) no doubt have the competency and facilities to turnout such trained personnel. However, their priorities and mandates are different. Moreover, those trained by IIM rarely go into the agri-business sector. The time is thus ripe for SAUs to start postgraduate programmes in agri-business management.

Current status

Most of the SAUs are offering post-graduate programmes in agricultural economics and agricultural extension. Tamil Nadu Agricultural University, Coimbatore was the first in the country to start masters programmes in agricultural marketing management and agri-business management. These two new programmes have been well received by the corporate sector. University of Agricultural Science .Bangalore was the first in the country to introduce Agricultural Marketing and Co-operation programme at under-graduate level. Now, a PG programme in sericultural marketing and co-operation is also in operation. Our experience of human resource development in specialised areas had met with relatively good

degree of success. However, we have to be cautious since it takes time for the employers to accept new degree holders especially in the public sector.

Issues

Two major constraints in initiating new programmes such as ABM in SAUs are there is resource crunch and lack of trained manpower. These could be addressed to some extent by pooling resources on multi- and interdisciplinary basis. Wherever possible, a separate PG department in agribusiness management could be created so that the expertise could be built over a period of time. If not, the Department of Agricultural Economics be strengthened by recruiting trained personnel in identified areas and also by training the existing staff members.

It is possible to operate the ABM programme as a multi- and interdisciplinary subject in the SAUs. All the SAUs can take the benefit of existing basic science and humanities departments such as economics, sociology, psychology, mathematics and statistics.

Agricultural engineers and horticulturists could be used for teaching post-harvest management and food technologists for food science.

Courses for post-graduate programme in agri-business management

The ABM programme mainly intends to cater to the emerging needs in the agri-food sector. In general, it should aim at producing following categories of trained manpower.

- i. Management personnel for the agri-food firms, entrepreneurs and cooperatives.
- ii. Policy makers for government, financial and parastatal agencies,
- iii. Teachers and research workers
- iv. Agri-business consultants and self-employed persons.

This programme is mainly designed for graduates coming out of the SAUs comprising of agriculture, horticulture, forestry, sericulture, agricultural marketing and co-operation. We may also think of admitting graduates in veterinary, fisheries, dairy and agricultural engineering. The scheme therefore, assumes that all students will have a knowledge of agricultural production so that instruction can concentrate exclusively on agri-business aspects.

The post-graduate course aims to provide students with an understanding of:

- i. the public policy framework within which business operate
- ii. the business and marketing management techniques necessary for graduates to operate as managers
- iii. the theoretical framework together with analytical techniques for decision making
- iv. conduct of research on a subject of topical interest.

The proposed course for the M.Sc programme in ABM are presented in Table 1. Clearly, this is only a model for masters course, but is flexible enough to incorporate location specific requirements.

The main focus of the proposed programme is to produce specialists who have understanding of production technology as well as business aspects of agriculture. This specialised type of training is even more useful when it comes to dealing with farmers who have been often told of production technologies with very less of marketing extension. It is therefore reasonable to believe that agri-business firms or organisations will provide employment to such post-graduates at middle management levels. Presently, the SAUs are keen to establish linkages with industry. This will provide us an opportunity to convince the industry that we are making effort to meet their requirement.

**Table 1 :
Proposed courses for M.Sc in agri-business management**

| A) | Major field |
|-----------|---|
| | Introduction to agri-business management |
| | Food policy and price analysis |
| | Marketing management and strategy |
| | Financial management |
| | Production management |
| | Project planning and management |
| | International trade and export management |
| | Managerial economics |
| | Operations research |
| | Organisational behaviour |
| | Post-harvest management |
| | Management accountancy |
| | Human resource management |
| B) | Minor/related field |
| | Micro economics |
| | Macro economics |
| | Statistical methods |
| | Multivariate analysis |
| | Rural sociology and development |
| | Farm management |

Conclusion

The introduction of ABM programme in SAUs as a part of the social science faculty has assumed importance in view of the changing scenario towards commercialisation of agriculture. The role expectations of the SAUs are changing and agri-business management will receive greater attention to meet the needs of the agri-food sector. The main focus of the programme is to produce agri-business managers who have the understanding of production technology as well as commercial aspects of agriculture.

9 Post-Graduate Programme in Agricultural Economics: Experience of IARI

Paramatma Singh
Division of Agricultural Economics, Indian Agricultural Research Institute,
New Delhi-110012.

Introduction

Achieving quick and higher growth in agricultural production remained the pursuit of Indian agricultural planning strategies since mid-sixties. Outpacing population growth with sufficient foodgrain production growth remained the major goal following the mid-sixty droughts which set the stage for the evolving of national agricultural research and education system in this country. The emphasis however kept shifting or rather enlarging in coverage starting from production oriented thrust to resource based and more recently sustainability based production and resource use strategies. While the NARS was getting re-oriented to these changes, the agricultural education system adapted little to the changing needs.

Natural resource related, environmental and ecological concerns have come to the fore while planning for future growth in agriculture. All this means, a felt and urgent need to review the existing status, strength and weakness of post-graduate teaching in general for making it more relevant and responsive to the changing and fast emerging liberalised regime in Indian economy. This paper addresses the issues relating to the masters programme in agricultural economics based on the experience at IARI.

Present status

The post-graduate programme in agricultural economics was started during 1961/62.

1. Initially, more thrust was placed on course work with the course load ranging from 60 to 70 credits. Of late, the course work has been reduced to 45 credits for M.Sc and 40 to 50 credits for Ph.D. These steps are aimed to provide more time for research work so that the quality of research output will be improved.
2. For masters programme, besides the basic level courses, students can take advanced courses as per their requirements. The programme endeavours to provide a set of core courses in the general field of student's major specialisation and a secondary grouping of courses in the related minor field(s).
3. The emphasis on courses and sub-disciplines of agricultural economics also underwent some changes. For a long period farm management and production economics dominated the curriculum which, however, expanded later to include more sub-disciplines such as agricultural marketing and prices, agricultural finance, development economics and econometrics.

Strength and weakness

The manpower trained by the division have distinguished themselves in several fields at regional, national and international levels. The postgraduate programme of the division is attracting students both from within and outside the country. Recognising the contribution of the division in research and teaching, it was elevated to the status of a Centre of advanced studies in agricultural economics in 1994-95.

However, this does not mean that the teaching programme is without blemishes. On the whole teaching programme of agricultural economics, agricultural marketing and agricultural finance need to be strengthened. Available expertise in new and emerging areas such as environmental pollution, natural resource depletion, threat to ecological biodiversity and international trade is very limited. No specialised training programme exists to update the faculty. It is entirely left to the individual faculty concerned to develop the needed expertise, teaching materials and methods.

It is also widely felt that institutions dealing with agricultural education should have a discipline of agricultural management, whose major components shall be contributed by the functional areas of agricultural economics, extension education, agronomy etc. along with other supporting areas of farm technology development. The basic idea of introducing this multi-disciplinary programme shall be to exploit the new emerging job opportunities in public, private and co-operative organisations.

The pedagogic teaching in social sciences needs to be reorganised with innovative teaching methods supplemented by visits to institutions and problem areas. The scope for introducing more computer-aided simulations for practical training need to be explored further.

The strength of the faculty, both in quantity and quality, is dwindling continuously. Teaching has no weightage in career advancement of scientists with the result that many consider teaching as a liability. It is the continuous neglect of this discipline over a long period of time that has led to such a situation. This warrants immediate intervention by the policy makers at the national level.

Similarly, there is no programme at present to upgrade the teaching standards of the faculty members by way of in-service training and refresher courses. The ICAR sponsored summer institutes are too few, besides shorter in duration to meet these challenging needs. It is acknowledged that the Indian Institutes of Management are organising six months faculty development programme with this objective in mind, but their in-take capacity is only 30 per year. There is also no mechanism to ensure continuous feed back from students to assess the strength and weakness of the faculty. Attempts to send a few top selected teachers abroad to acquaint them with teaching in some of the best universities in the world are also not there. Consequently, teaching has become a static ritual rather than a dynamic and vibrant process.

The libraries in SAUs or ICAR deemed universities give a lot of importance to biological sciences at the cost of information flow in social sciences. So is the need for a data bank involving at least parameters of importance at the block, district, state, and national levels.

Suggestions for improvement

Screening and assigning the responsibility of teaching to selected faculty members who have adequate affection and capability for teaching.

Introducing and strengthening reward and incentive system for committed teaching as initiated at IARI is recommended for all institutions. IARI has introduced best teacher award of Rs 10,000 in cash to five faculty members and a letter of appreciation for excellence in teaching based on feed back provided by the alumni of the concerned disciplines. Weightage should be assigned to the number of courses handled at the time of induction and career advancement also. At no point of time a scientist shall feel that teaching is a non-rewarding liability.

Revision and up-date of syllabus periodically, and strengthening the faculty quantitatively through new inductions as and when vacancies occur and qualitatively through inservice training, refresher courses, foreign training and deputation to faculty development programmes require immediate attention.

Development of specific areas of expertise such as environmental impact analysis, natural resource economics, biodiversity, agricultural management and institutional economics. Computer-orientation to all faculty members so as to use it as a teaching tool besides developing good library facility, data bank and linkage with institutions are essential.

10 Improving Post-Graduate Curriculum in Agricultural Extension- Experience of IARI

K. Vijayaragavan and Y. P. Singh
Division of Agricultural Extension, Indian Agricultural Research Institute,
New Delhi-110012.

Introduction

The Division of Agricultural Extension of IARI is one of the important national centres in the field of agricultural extension. The M.Sc programme in agricultural extension was started in the year 1955 and the Ph.D programme in 1958. This paper presents the recent changes made in the curriculum of M.Sc programme to meet the current professional needs and challenges. Further, some of the issues related to teaching extension education in the context of changing agricultural scenario of the country have also been discussed.

Revision of course curriculum

Realising the need for revising the existing post-graduate curriculum in the context of developments in frontiers of the discipline as well as changing agricultural scenario, a massive curriculum revision exercise was undertaken during 1993-94.

The revised curriculum consists of courses in the following subject areas: extension education, agricultural communication, agricultural management, training, rural sociology and psychology, home science, and research methodology. Specialisation within the divisional courses is possible in two fields namely agricultural communication and agricultural management.

The revised curriculum followed at present (both M.Sc and Ph.D courses together) covers new developments such as Farming Systems Research and Extension (FSRE), indigenous knowledge system, participatory rural appraisal techniques, agro-ecosystem analysis, agricultural knowledge system perspective, role of extension in technology generation and sustainable development, privatisation of extension, modern communication and information technologies, training and instructional technologies and experimental learning. Realising the need for specialisation in management, a minor field of specialisation in agricultural management has been introduced. Further seven new courses covering the following areas have also been introduced :

- i. Recent advances/development in agricultural extension,
- ii. Comparative agricultural extension system,
- iii. Management techniques,
- iv. Organisational behaviour,
- v. Agricultural research management,
- vi. Entrepreneurship development and
- vii. Visual graphics communication.

At present the trimester system of instructions is being followed. Out of a total of 68 credits available within the major area, a student is expected to take about 30 credits. He is also supposed to complete his course work within 3 or 4 trimesters.

Apart from changes in curriculum, the Division of Agricultural Extension has introduced changes in the pedagogical methods. Some of the newly introduced methods are: *case study*, *experiential learning*, and *participatory method*. Further in recent years, many faculty members and scientists have undergone training courses which are relevant to the newly

introduced courses. Under HRD programme of ICAR many more scientists are expected to go for further training.

Need for regional centres of excellence

The improvement in teaching as well as offering specialisation in new areas calls for improvement of quality of faculty members as well as creating suitable infrastructure. This can be done through establishing centres of excellence in extension education at selected regions with appropriate facilities. These centres can help in training of teachers as well as students.

Relevance of research work

In the coming years we have to produce extension professionals suiting not only to manage government programmes but also to manage private enterprises, NGOs, corporate sectors, international organisations etc. Further we have to produce professionals who will go for self-employment and consultancy services. In this context, we have to look for the relevance of research work done as a part of M.Sc in extension. The research or project work should be designed to give sufficient field experiences and help in development of professional skills, and understanding.

Pedagogical methods and development of skill

The need for participatory method of learning and development of necessary technical, behavioural and social skill needed to match the professional demand has greatly enhanced in the present context. The extent of skill development at present at M.Sc level is not adequate. Though it is not possible to expose the students to all areas of skill development, it is necessary that a minimum level of skill related to training, participatory methodology, communication etc. is acquired by the students.

Centre of advanced studies in agricultural extension

The Division of Agricultural Extension has also been recognised as Centre of advanced studies in agricultural extension with a financial grant of 32.5 lakhs. Under this programme, the division is organising advanced level training programmes to university teachers/scientists in areas like entrepreneurship development, motivational development, agro-ecosystem analysis and communication technologies. Further computer facilities and library facilities in the division have been improved.

Issues to be tackled

Though we have revised the curriculum of agricultural extension, we feel that more changes are needed to produce competent extension professionals in the context of emerging changes and needs.

Presently extension has to solve not only existing problems such as production of food for increasing population, continuing poverty, reduction of inequality, rural unemployment, etc. but also a variety of complex problems. These issues are related to sustainable development, environmental protection, energy efficiency and rapidly changing economic and technological scenario. *This calls for creating specialised fields within extension education so that a student is well trained in one or two areas and is able to develop necessary skills and experience to tackle emerging problems.* Possible areas of specialisation which are to be introduced in the coming years are as follows:

Information technology : specialisation in computer based information technology.

Entrepreneurship Development : focusing on developing entrepreneurial skills as well as expertise on commercial farm technologies to produce students for self-employment and consultancy services.

Extension Management : focusing on management of extension organisations, human resource development within developmental organisations as well as among farmers and management of extension projects.

Technology Assessment and Impact Analysis : focusing on generation of appropriate farm technology and impact of technologies.

11 Extension Education Curricula at Masters Level - Some Reflections

C. Bhaskaran and Ranjan S. Karippai
College of Horticulture, Kerala Agricultural University,
Thrissur-680654.

Introduction

Extension education occupies a very enviable status in the hierarchy of technological changes because, its personnel have the background of both the technology and behavioural sciences in addition to sound information of extension education itself. This paper attempts to analyse the contemporary extension education courses at the masters level with a view to make it more vibrant and meaningful.

Issues

The credibility' of extension professionals is increasingly becoming suspect now-a-days. This warrants urgent intervention through collective thinking among extension professionals in this country. Conventional extension education have undergone several changes during the past two decades. Extension systems in different countries are undergoing structural changes. Privatisation of extension, entry of non-governmental organisations, and agri-business houses in extension and advances in information technology etc. have changed the extension scene considerably. All these necessitates a thorough restructuring of the extension curricula at the post-graduate level.

Extension education as the warp and welf

To begin with, certain concepts have to be made clear. Extension education as a subject is offered in the agricultural universities in various names and forms such as Agricultural extension, Horticultural extension, Fisheries extension, Veterinary extension, Home science extension etc. It has been proved beyond doubt that in spite of all these variations the common filament behind them is the core subject matter of extension education. It will be better therefore, that specialisations in Agricultural extension, Veterinary extension and Home science extension can be offered by one Department of Extension Education (preferably at the main campus of the university) with a competent core faculty consisting of all these specialisations. Concurrently, teaching extension education at under-graduate level in the colleges can be undertaken by individual departments in the colleges with staff qualified in Agricultural extension/Veterinary extension/Home science extension. Extension education department in the main campus can be elevated to the status of a Centre of excellence to facilitate advanced specialisations and cross fertilisation of ideas and approaches.

Quo vadis extension

Another issue which has generated heated debates in the recent times is whether or not there should be specialisation in extension education at the masters level. We hold the view that there is a need to distinguish between masters and doctoral level specialisations in extension education according to the emerging demands. With the introduction of the UGC/ICAR scheme, Ph.D holders in extension education will be required in the universities and research institutes for undertaking teaching and research careers in extension education, while the masters degree holders would find gainful employment as trainers, executives, managers, project consultants etc. in voluntary/NGO, commodity boards, corporate sectors, plantation and other private enterprises. They would require sound footing in the basics of extension education with specialised knowledge and skills in the sectors of their employment, Therefore, at the masters level, a three fold course categorisation is indispensable-core basic courses, core applied courses and optional courses.

Three-tier course cafeteria

Core basic courses should include rural sociology, social psychology, educational psychology, anthropology etc. Core applied courses would consist of extension teaching methods, audio-visual aids, communication process, HRD, R&D policies and programmes, extension systems management, computer applications in extension, and programme planning. Optional courses aimed at providing the required skills in the future careers of these masters degree holders, should include advanced training methodology, administration, information technology management and media programme production.

Research training

The core basic, applied and optional courses should cover 75 per cent of the total course requirement at the masters level. The remaining 25 per cent course should be from research methodology and statistical techniques in social sciences. This is aimed at providing research orientation in extension education to the candidates desirous of pursuing their Doctoral programme. In the case of those who would seek employment after masters degree, this research orientation is required for systematic impact assessment, appraisals, monitoring and evaluation of the programmes they implement in their jobs. Exposure to case study method, participatory rural appraisal, rapid rural appraisal, farming systems research/extension and such other modern methods and tools will have to be attempted in these courses.

Extension for non-extensionists

Core applied courses can be so formulated with a view to provide perspectives on teaching/training methodologies, policy implications of major contemporary policy issues like WTO, privatising research/extension services etc. to benefit masters level students in other disciplines who would opt for the teaching/research careers.

Can we do away with sociologists, psychologists etc.?

Another issue of concern is about the relevance of professional sociologists, psychologists and anthropologists in the agricultural university set up. It is our firm conviction that the core basic courses listed earlier could be handled effectively only by these professionals. They could also provide the necessary interdisciplinary character to the research pursuits of the University level Department of Extension Education, besides opening up the new vistas of cognitive domains in these fundamental social science disciplines.

Greener pastures

Recent literature related to extension indicates the efficacy and development of extension methods/approaches world over. Sophisticated communication technologies such as video text, teletext and computer aided instruction have revolutionised the conventional concept of extension education. Management concepts, games and psycho-analytical procedures such as transactional analysis have thrown open immense potential for applications by professional extension managers in their pursuits. All these developments have to be blended with concepts like indigenous traditional knowledge systems and channelised to reach the students in extension education.

Conclusion

The day is not far off when masters degree holders in extension education will have to enter the self employment market in ventures such as customs and hire services, project consultancy and project formulation and execution, for which also the budding extension professionals are to be equipped with. The lasting tenet of extension education being technology/enterprise/client specificity, the ultimate objective of postgraduate training in extension education must be to make them competent to apply their knowledge and skills to varying situations in both temporal and spatial dimensions. Such an attempt on the part of extension educationist will go a long way in making revolutions like green revolution equitable, sustainable and evergreen.

12 Post-Graduate Teaching in Social Sciences with Particular Reference to Agricultural Extension

S. Y. Kulkarni and P. S. Shinde

Department of Extension Education, Dr. Panjabrao Deshmukh Krishi Vidyapeeth,
Akola,
Maharashtra-444104.

Introduction

Realizing the importance of providing trained extension personnel a number of extension training centres including basic agricultural schools were established initially in the state of Maharashtra. Post-graduate instructions in agricultural extension leading to M.Sc (Agri.) degree commenced at College of Agriculture, Nagpur in 1958 and College of Agriculture, Pune in the year 1961. With the establishment of four Agricultural Universities in the state, independent Post-graduate Department of Extension Education imparting post-graduate instructions in agricultural extension was established at Akola, Rahuri, Parbhani and Dapoli.

Teaching in extension education at masters level first started in 1958 with limited seats. The same was affiliated to the traditional university. However, with the establishment of Dr. Panjabrao Deshmukh Krishi Vidhyapeeth, Akola, admission strength was increased to the extent of 13 which rose subsequently to 27 at present. Although the Department of Extension Education is offering assistance to other departments/ directorates by way of preparing teaching aids, training the faculty in handling audio-visual aids and equipments, providing photographic services, communicating farmers' problems to the scientists, helping in the organisation of seminars, workshops etc., the Department is suffering from various deficiencies. Some of the major issues that have been affecting the teaching programme in extension are as follows.

Issues

1. Though several courses are being offered at the masters level, the understanding passed on to the students through these courses, presently appears to be inadequate and do not satisfy or equip the outgoing students to meet the challenges confronting in their profession. PG curriculum of agricultural extension requires immediate revision and updating.
2. Extension Education Department of this University suffers from inadequate faculty strength and lacks teachers with higher qualifications, competency and teaching experience.
3. Extension professionals should have enough knowledge on social science subjects *viz.* rural sociology, sociology, psychology and anthropology. Though courses from these disciplines are offered at masters level, independent departments are not in existence.
4. Lack of sophisticated equipment, modern teaching aids and well equipped audio visual laboratory affects effectiveness of extension teaching.
5. Attaching of atleast one development block to the Department of Extension would enable post-graduate students to use the same as extension/field laboratory for off-campus practicals and for testing of technologies developed by the university prior to its release.
6. Activity wise allocation of budget in various agricultural universities would reveal that in comparison with teaching, research and administration, meagre budgetary provision is made for extension education. In the absence of adequate provision, it become next to impossible to carry-out various types of activities relating to extension work.

Extension research

An important aspect that needs mention here is the concentration of research in some areas of the discipline. The major research areas in extension are communication of agricultural innovation, adoption and diffusion of agricultural innovation, extension teaching methods and aids, rural leadership, rural social systems, mass media communication, interpersonal communication, extension administration, extension management, rural youth, voluntary organisations, basic rural institutions, training, impact studies, and evaluation. However, analysis of the number of studies (area-wise) conducted by PG students in the Department shows that the areas namely, agricultural journalism, extension administration, job satisfaction, leadership, managerial behaviour, rural social system, rural youth, training and tribal community have been left neglected (Table 1). This aspect should be kept in mind while selecting topics for postgraduate research in extension education.

Table 1 :
Distribution of post-graduate research in the discipline of extension education during the period of 1978-88.

| SI No. | Area | Number |
|--------|---------------------------------------|--------|
| 1. | Agricultural communication | 29 |
| 2. | Agricultural journalism | 04 |
| 3. | Diffusion and adoption of innovations | 63 |
| 4. | Extension administration | 10 |
| 5. | Extension evaluation/impact | 21 |
| 6. | Job satisfaction | 03 |
| 7. | Leadership | 05 |
| 8. | Managerial behaviour | 05 |
| 9. | Rural social institutions | 06 |
| 10. | Rural social system | 10 |
| 11. | Rural youth | 03 |
| 12. | Training 06 | |
| 13. | Tribal community | 02 |

Source : *Bibliography (1978-88) published by Department of Agricultural Extension, PDKV, Akola (1990).*

Suggestions

1. In order to equip the students to take up jobs with various organisations, the teaching programme in the university could be oriented towards the following three aspects.
 - a. Guiding students to take up minor courses according to their job interest.
 - b. Keeping the job interest of the students in view while allocating research projects.
 - c. Provision of specific courses relating to various job areas in the curriculum such as credit, agricultural journalism, personnel management, human resource

management, instructional technology and other field oriented subjects such as crop and fruit production, plant protection, animal sciences, forestry, fisheries etc.,

2. A thorough revision of the masters curricula to bring about improvement and uniformity in all the agricultural universities throughout the country. Universities should also strive to bring uniformity on courses, teachings, subject matter coverage and evaluation among their different campuses.
3. Development Block should be attached to the Department of Extension Education to serve as a field/education laboratory for the students and staff.
4. Staff strength in the teaching departments needs to be increased to meet the prescribed norms. Moreover, additional funds and facilities should be provided particularly for effective implementation of practical training of students. The department should be fully equipped with audio-visual aids laboratory including sophisticated equipments and facilities for preparation of audio and video tapes, such as TV Camera, TV, VCR, recording studio, tape recorder camera, darkroom etc.
5. The Department of Extension Education should be supported with adequate grants for organisation and participation in summer institute, workshop, seminar and symposium on various aspects of extension education.

13 Post-Graduate Teaching in Agricultural Extension

J. Vasanthakumar and Santha Govind
Department of Agricultural Extension, Annamalai University,
Tamil Nadu-608002.

The post-graduate teaching in agricultural extension at masters level tries to cover everything in a two year programme in contrast to one-year programme of developed countries. Nevertheless, the graduates lack confidence in what they have learned compared to their counterparts in developed countries. The issue is dealt briefly in the following sections.

Major lacunae in current teaching programmes

- As the curriculum tends to limit the coverage to traditional areas like sociology, communication, training and research methods, inadequate coverage of development communication, multi-media, games and measurement is reported.
- Recent development in frontiers of the discipline such as participatory technology development and transfer and comparative analysis of extension approaches need to be incorporated.
- Current and emerging social demands relating to gender issues, people participation and sustainability concerns have become more relevant than ever before.
- Inadequate subject matter coverage is mainly due to large scale use of lecture method even at post-graduate level, developing thereby, some sort of, dependency syndrome among students towards their teachers and their notes.
- Students at masters level may be given a brief tie-up with industries, media organisations and NGO's so as to familiarise them with current practices of the field.
- Programmes of visiting academics from SAUs and foreign countries may be arranged in all SAUs to provide up-to-date exposure to the students.

Relevance of specialisation and research training

- The specialisation may not be relevant at masters level but may be relevant at Ph.D level. However, research may provide some specialised knowledge.
- Research training given at masters level is limited to relating socio-economic and psychological variables to adoption or communication. Non-utility of such studies question the relevance of some training. Research training has to be reoriented to such utility as an important dimension.

Suggestions for a rational programme

- The major lacunae in the curricula at present is under- coverage which is to be set right by incorporating new content. A shift from lecture method to participatory approaches is needed immediately. Further, it would make the students active learners rather than passive listeners. Sensitisation to indigenous knowledge system and sustainability issues may be taken up at the under graduate level especially during village stay programme

Institutional and policy support needs

- Infrastructural requirements for net-working and creation of database may be attended early.

Centres of excellence

- Centres of excellence may provide necessary back-up to SAUs and other institutions in terms of in-service training, supply of audio-visual materials and current literature as well as networking.

14 Post-Graduate Teaching in Agricultural Extension with Relevance to Current and Emerging Social Demands

P. Venkataramaiah and M. Suresh Kumar
Extension Education Institute, Andhra Pradesh Agricultural University,
Hyderabad-500030.

Introduction

The benefits of good agricultural extension have long been recognised, yet so often extension services in developing countries like India have failed to meet the expectations. This may be due to the lack of effective means of bringing information to many millions of farmers in right time and in right form. To be successful, extension would have to evolve from a technical delivery function to a farm consultancy service and finally to a rural advisory facility.

Course contents

Therefore, the post-graduate academic programme should focus on a different course content which include core areas like co-ordination and conflict resolution, reporting systems, human resource development, management information systems, crisis management in agriculture, farming systems research/extension, time and personnel management, participatory leadership, research methodology and computer applications in social sciences. The minor would include agricultural marketing, international trade, public policies for change or policy issues in extension, problems of agricultural development and farm management. There is a need for package tips for different crops from agronomy and capsule courses on plant protection from entomology and plant pathology department. There should be some audit courses on environmental issues, functioning of NGO's and co-operatives etc. All these courses should be supported with sufficient practical training at the field/operational level. Then only the real purpose of incorporating all these courses in the syllabus will be achieved.

In other words the post-graduate agricultural extension student should be a generalist to take as many problems of the farmers as possible. This calls for radical changes in the context of presently offered agricultural extension courses at PG level like rural sociology, educational psychology, communication, extension teaching methods and audio-visual aids, programme planning, diffusion and adoption of innovations, training, supervision and management, agricultural journalism, attitude scale constructions, and educational technology.

Further, extension post-graduates should be committed to the development of India's rural areas. Therefore the departments should offer post-graduate academic training in such courses which would produce post-graduates who would be, well equipped to successfully implement rural development and extension programmes. A suitable course in rural sociology has to be developed for this purpose.

Research

Agricultural extension research has evolved through different stages such as interpersonal communications in 60's, constraint analysis in 70's, management aspects in 80's and systems approach to agricultural information in 90's. Presently there is a need to undertake research on demand and supply of information so that the most effective and efficient ways to match them could be identified. The policy issues which will strengthen further the cause of extension are to be identified and research in extension should be conducted on those lines.

This calls for:

1. Frequent informal discussions by the administrators with the researchers;
2. Collaboration with various agencies in conducting research;
3. Guest lectures by experts from various fields; and

A complete revamping of the syllabi at the post-graduate and doctoral level is thus recommended on the above lines.

LIST OF PARTICIPANTS

Prof. S.S.Johl
C-21, Gurdev Nagar
Ludhiana,
Punjab.

Dr. V. Rajagopalan
Chairman Centre for Development & Policy
Studies,
42-E, 2nd Street Secretariate Colony
Kelly s, Madras-600 010
Tamil Nadu.

Dr. M.L. Madan
Dy. Director-General (AS)
Indian Council of Agricultural Research
Krishi Bhawan
New Delhi- 110001.

Dr. S.L. Mehta
Dy. Director-General (Edn.)
Indian Council of Agricultural Research
Krishi Bhawan
New Delhi- 110001.

Dr. P.G. Chengappa Professor & Head
Deptt. of Agril. Marketing & Co-operation
University of Agril. Sciences Hebbal,
Bangalore - 560 024 Karnataka.

Dr. Mruthyunjaya
Asst. Director-General (ESM &PIM)
Indian Council of Agricultural Research
Krishi Bhawan
New Delhi- 110001.

Dr. B.S. Hansra
Asst. Director-General (Ag. Extn.)
Indian Council of Agricultural Research
Krishi Anusandhan Bhawan
New Delhi -110012.

Dr. S.Y. Kulkarni
Professor & Head Post Graduate
Institute Deptt. of Agril. Extension
Dr. Punjabrao Deshmukh
Krishi Vidyapeeth
Akola-444104
Maharashtra.

Dr. P. Kumar
Head Division of Agril. Economics
Indian Agricultural Research Institute,
New Delhi - 110012.

Dr. L.R. Singh
Professor & Head Deptt. of Agril. Economics
College of Agriculture,
G.B. Pant University of Agri. & Technology
Pantnagar 263145
Uttar Pradesh.

Dr. S. Krishnamoorthy
Professor & Head Deptt. of Agril. Economics
Tamil Nadu Agril. University
Coimbatore - 641003
Tamil Nadu.

Dr. Y.P. Singh
Former Professor
Deptt. of Agril. Extension
Indian Agricultural Research Institute,
New Delhi - 110012.

Dr. C.C. Maji
Former Director
National Centre for Agricultural Economics and
Policy Research
New Delhi -110012.

Dr. B. B. P. S. Goel
Director
Indian Agricultural Statistics Research Institute
Library Avenue
New Delhi- 110012.

Dr. C. Bhaskaran
Professor & Head Deptt. of Agril. Extension
College of Horticulture
Kerala Agricultural University
Thrissur - 680654
Kerala.

Dr. Vasanthakumar Professor & Head Deptt. of
Agril. Extension Faculty of Agriculture
Annamalai University Annamalai Nagar - 608
002 Chidambaram Tamil Nadu.

Dr. (Mrs.) Santha Govind
Associate Professor
Deptt. of Agril. Extension
Annamalai University
Annamalai Nagar - 608002
Chidambaram
Tamil Nadu.

Mr. Suresh Kumar
Ph.D Student (Agril. Extension)
Andhra Pradesh Agricultural University
Hyderabad - 500030.

Dr. Paramatma Singh
Professor
Division of Agril. Economics
Indian Agricultural Research Institute,
New Delhi - 110012.

Dr. P.S. Shinde
Associate Professor
Deptt. of Extension Education
Punjabrao Krishi Vidyapeeth
Akola-444104
Maharashtra.

Dr. B.P. Sinha
Head Division of Agril. Extension
Indian Agricultural Research Institute,
New Delhi - 110012.

Dr. K. Vijayaraghavan
Senior Scientist
Division of Agril. Extension
Indian Agricultural Research Institute,
New Delhi - 110012.

Dr. V.V. Sadamate
Director (Extn. Management)
Krishi Vistar Bhavan
New Delhi -110012.

Dr. S. Selvarajan
Principal Scientist
National Centre for Agricultural Economics
and Policy Research
New Delhi- 110012.

Dr. G.A.K. Kumar
Research Associate
Division of Agril. Extension
Indian Agricultural Research Institute
New Delhi -110012.

Dr. Dayanatha Jha
Director
National Centre for Agricultural Economics and
Policy Research
New Delhi- 11001 2.

Dr. G. Singh
Senior Scientist
National Centre for Agricultural Economics and
Policy Research
New Delhi- 110012.

Dr. Rasheed Sulaiman
V. Scientist
National Centre for Agricultural Economics and
Policy Research
New Delhi- 110012.

Dr. Ramesh Chand
Principal Scientist
National Centre for Agricultural Economics and
Policy Research
New Delhi- 110012.

Dr. Pratap Singh
Scientist
National Centre for Agricultural Economics and
Policy Research
New Delhi- 110012.