

**AGRICULTURAL EXTENSION  
CURRICULA IN INDIA: IS IT  
RELEVANT TO CHANGING TIMES?**

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## **Agricultural Extension Curricula in India: Is it Relevant to Changing Times?**

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**WORKING PAPER**

**4**

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for innovation

**Agricultural Extension in South Asia**

April 2018

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## Abbreviations

AESA	Agricultural Extension in South Asia
AIAEE	Association for International Agricultural Extension Education
AIS	Agricultural Innovation System
AKIS	Agricultural Knowledge and Information System
ARS	Agricultural Research Service
ATMA	Agricultural Technology Management Agency
BAIF	BAIF Development Research Foundation
BSMAC	Broad Subject Matter Area Committees
CNA	Capacity Need Assessment
CPD	Continuous Professional Development
CRISP	Centre for Research on Innovation and Science Policy
CSAUAT	Chandrashekhar Azad University of Agriculture & Technology
EAS	Extension and Advisory Services
EEl	Extension Education Institute
GFRAS	Global Forum for Rural Advisory Services
IAEN	Indian Agricultural Extension Network
ICAR	Indian Council of Agricultural Research
ICT	Information and Communication Technology
ITK	Indigenous Technical Knowledge
JRF	Junior Research Fellowship
MANAGE	National Institute of Agricultural Extension Management
MBA	Master of Business Administration
MoA&FW	Ministry of Agriculture and Farmers Welfare
MSc	Master of Science
MSW	Master of Social Work
NAAS	National Academy of Agricultural Sciences
NAARM	National Academy of Agricultural Research Management
NCAP	National Centre for Agricultural Economics and Policy Research
NELK	New Extensionist Learning Kit
NGO	Non-Governmental Organization
NQF	National Qualification Framework
PG	Post graduate
PhD	Doctor of Philosophy
PRADAN	Professional Assistance for Development Action
RAWE	Rural Agricultural Work Experience
SAMETI	State Agricultural Management and Extension Training Institute
SAQA	South African Qualification Authority
SAU	State Agricultural University
SRF	Senior Research Fellowship
UG	Undergraduate
USA/US	United States of America

## Executive summary

The agricultural extension curricula currently followed in India at the undergraduate, postgraduate and doctoral levels need revision. This need has been recognized by many scholars and articulated in several workshops and conferences. Though a few attempts have been made over the past four decades to revise the curriculum, it has remained more or less static. Though there have been extension-relevant advances in the fields of communication, sociology, psychology, management, innovation studies, and social science research methods, they are yet to find a place in the extension curriculum. Consequently, due to the lack of essential extension competencies, agriculture graduates in general and those with MSc and PhD in agricultural extension in particular face challenges in finding appropriate jobs.

This paper reviews the extension curricula currently followed in universities in India at different levels in light of the new challenges faced by farmers, the new capacities needed among extension personnel to address these challenges, new trends in the job market and advances made in the field of extension. Apart from analyzing the existing mechanisms available for curriculum reform in India, the paper also reviews the literature on extension curriculum reforms elsewhere including recent efforts by the Global Forum for Rural Advisory Services (GFRAS) to develop and promote the New Extensionist Learning Kit (NELK), a collection of learning resources in specific areas where capacities of extension professionals need to be enhanced.

The major findings of this paper are as follows:

Firstly, the current process employed in revising the extension curriculum needs to change. The committee of experts constituted once in a decade, which meets three or four times and only makes marginal changes to the existing curricula, has not been able to bring about the necessary changes. Secondly, there is a lot of repetition of content at the UG, PG and PhD levels. Unless this issue is addressed, no space would be available within the current course structure to add more relevant content. Thirdly, a lot of the current course contents are outdated and do not support either the development of core extension competencies in a field professional or the core research or managerial competencies required of a social science researcher or senior extension manager. Finally, curricular reforms have not quite clearly addressed the issue of having an appropriate instructional methodology that would lead to the desired learning outcomes.

This paper primarily argues for having more elaborate user consultations and identification of core extension competencies needed at the UG, PG and PhD levels. The competencies to be developed at each level should be the starting point for the design and revision of extension curricula. The best way forward might be to form small groups around each of these broader competency areas and to support each group in working on how such core competencies could be developed through appropriate curricula and instructional methods.

# 1. Introduction

The agricultural extension curricula currently being followed in India need revision. This need has been recognized by many and articulated in several workshops and conferences, including the Indian Extension Congress in 2018<sup>1</sup>. Although attempts have been made in recent years to revise the extension curriculum at the undergraduate (Fifth Deans Committee Report 2017)<sup>2</sup> and postgraduate levels (New and Restructured Post-Graduate Curricula and Syllabi 2009)<sup>3</sup>, not much has changed over the past three decades.

This is a matter of great concern as the broader context of Indian agriculture has evolved considerably. There have been new insights in the area of communication, innovation and extension studies. Advances have taken place in the field of social science research. That apart, agriculture graduates in general and postgraduates in agricultural extension in particular face challenges in finding appropriate jobs due to the lack of core competencies in extension. This paper, developed as a background document for the MANAGE

National Workshop on Agricultural Extension: Time to Change (14-16 February 2018), examines the content of extension curricula taught in India at the undergraduate (UG) and postgraduate (PG) levels in the light of the changing context of agriculture and the new developments taking place in the field of extension globally.

This working paper is organized as follows: An outline of the methodology followed in reviewing the agricultural extension curricula taught in India is presented in Chapter 2, followed by a review of literature on reforms in extension curricula and the new capacities needed by extension and advisory service providers in Chapter 3. A critique of the existing UG curricula is presented in Chapter 4. The extension curriculum suggested by ICAR at the PG level (core courses) is reviewed in Chapter 5 along with the MSc agricultural extension curricula followed in 16 universities. An analysis of the courses prescribed at the PhD level is presented in Chapter 6. The paper makes suggestions and explores the way forward to make extension curricula more relevant in Chapter 7.

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<sup>1</sup> IEC (2018). 1st International Extension Congress, 1-3 February 2018, Bhubaneswar.

<sup>2</sup> ICAR (2017). Report of the Fifth Deans Committee on Agricultural Education in India. Indian Council of Agricultural Research, New Delhi. <http://www.icar.org.in/files/FifthDeansCommitteeReport-22022017.pdf>

<sup>3</sup> ICAR (2009). New and Restructured Post-Graduate Curricula and Syllabi on Social Sciences, Education Division, ICAR, New Delhi. <http://www.icar.org.in/files/edu/Revised-PG-Course-Curricula-andSyllabi/Social%20Sciences%2030.4.2009.pdf>

## 2. Methodology

We approached this study by undertaking a review of the reforms of extension curricula attempted in India and abroad. We also initiated an online survey of prospective employers' perceptions on the employability of agriculture graduates and an exercise to assess the functional competencies of agriculture professionals. Both these activities are in progress and we will share an update on them by August 2018.

We also reviewed the courses in agricultural extension recommended by ICAR and taught in universities at the UG and PG level. We benchmarked their content against the New Extensionist Learning Kit (GFRAS 2017)<sup>4</sup>

and also the findings of the capacity needs analysis of extension and advisory services in India (AESA 2016)<sup>5</sup> and similar courses followed in universities abroad (Annexure 1).

We found that most of the universities in India are following the Deans Committee-recommended syllabus at the UG level without much variation, and the New and Restructured Post-Graduate Curricula and Syllabus prescribed by ICAR at the PG level with 10-20 per cent variation. We benchmarked research training at the PG level against the Manual on Good Practices in Extension Research and Evaluation (AESA 2017)<sup>6</sup>.

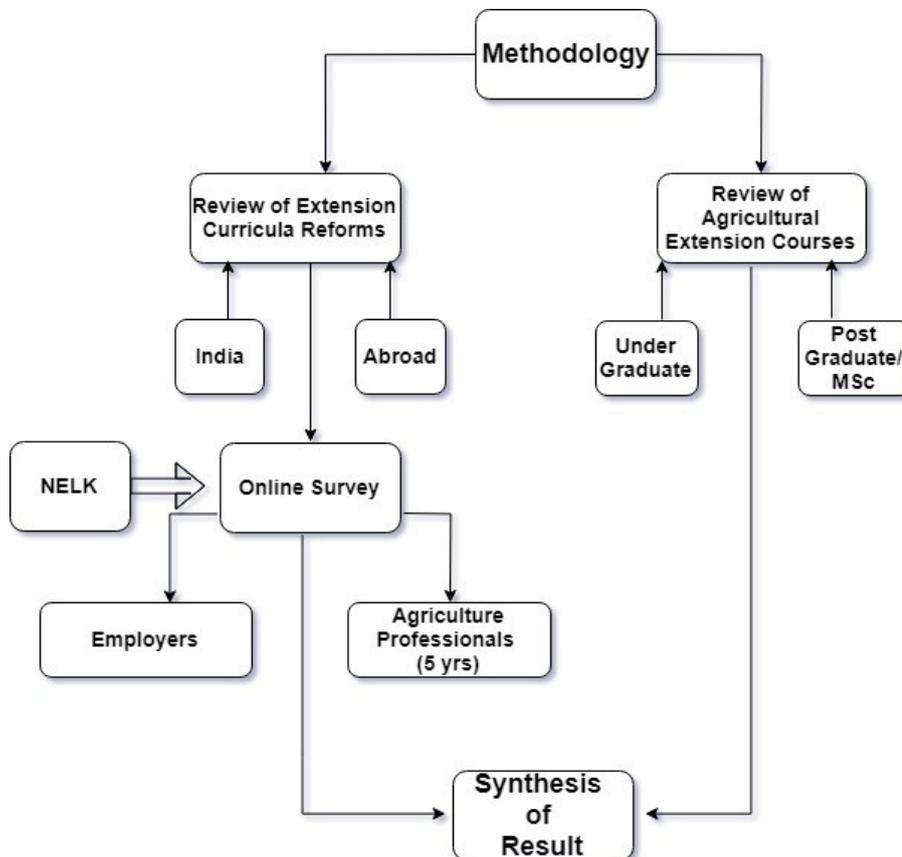


Figure 1. Approach to the review of agricultural extension curricula.

<sup>4</sup> GFRAS (2017). The New Extensionist Learning Kit. Global Forum for Rural Advisory Services, Switzerland. <http://www.g-fras.org/en/knowledge/new-extensionist-learning-kit-nelk.html>

<sup>5</sup> AESA (2016). Assessing Capacity Needs of Extension and Advisory Services: A Guide for Facilitators. <http://www.aesa-gfras.net/Resources/file/Facilitators%20Guide%20Final.pdf>

<sup>6</sup> AESA (2017). Manual on Good Practices in Extension Research and Evaluation. AESA, ICAR-NAARM, CRISP, ICAR-CTCRI and MANAGE. <http://www.aesa-gfras.net/admin/kcfinder/upload/files/MANUAL-Good%20Practices%20in%20Extn%20Res%20Evln-L.pdf>

## 3. Reform of extension curricula

### 3.1 Why curriculum reform?

Curriculum reform essentially means bringing about changes to the subject content, delivery, and assessment of a curriculum. In the field of agricultural extension, curriculum reforms are important for several reasons.

#### *New challenges in farming*

Originally developed to educate rural communities about new technologies developed by researchers to improve farm production, Extension and Advisory Services (EAS) now have to respond effectively to new challenges in agricultural development (Box 1).

(AESA 2016)<sup>8</sup>; (GFRAS 2017)<sup>9</sup>. To do this, its strategies and programme delivery architecture needs to be reformed to better meet the needs of numerous and diverse clients with a varied resource base and differing risk-bearing capacities.

#### *The changing job market for extension professionals*

Agriculture extension is no longer only a public sector phenomenon. It now involves a more complex range of actors providing a wide range of services, together bracketed as EAS. These include organisations in the private sector dealing with agriculture inputs, agribusiness, and financial

#### Box 1. Changing Nature of Agriculture and Rural Livelihoods

- Degradation of the natural resource base and declining availability of land and water for agriculture
- Opening of new markets and the need to adopt new production and environmental standards
- Increasing demand for enhanced income from farming through farmer participation in value chains and entrepreneurship development
- Impact of climate change, making agriculture more vulnerable to extreme weather events
- Increasing corporate control on agricultural inputs and retailing of food products
- Increasing women's participation in agriculture (self-employed or wage work)
- Declining interest of youth in taking up farming as an occupation

#### *Need for new and varied capacities*

These challenges mean that extension today needs to tackle an increased diversity of objectives that not only include but also go beyond transfer of new technology and increasing production. The number and diversity of organizations involved in extension and advisory services has increased over the past few decades and extension is required to play an increasingly important intermediation and facilitation role to support application of new knowledge (GFRAS 2012)<sup>7</sup>;

services; non-governmental organizations (NGOs) (international as well as local); producer groups, cooperatives and associations; consultants (independent as well as associated with or employed by agri-business/producer associations) and information and communication technology (ICT)-based services. The job market for extension professionals has thus changed and now demands quite different competencies than were required at the time when extension education was first introduced as a subject of study in agricultural universities (Box 2).

<sup>7</sup> GFRAS (2012). The New Extensionist: Roles, Strategies, and Capacities to Strengthen Extension and Advisory Services (Sulaiman R.V. and Davis K., eds.). Global Forum for Rural Advisory Services, Switzerland. <http://www.g-fras.org/en/knowledge/gfras-publications.html?download=126:the-new-extensionist-position-paper>

<sup>8</sup> AESA (2016). Capacity Needs of Extension and Advisory Services (EAS) in South Asia-Policy Brief 1 (Sulaiman R.V. and Mittal N., eds.). Agricultural Extension in South Asia. [http://www.aesagfras.net/workingpaper2.php?id=8&title=Policy%20Brief%20No.1:%20Capacity%20Needs%20of%20Extension%20and%20Advisory%20Services%20\(EAS\)%20in%20South%20Asia](http://www.aesagfras.net/workingpaper2.php?id=8&title=Policy%20Brief%20No.1:%20Capacity%20Needs%20of%20Extension%20and%20Advisory%20Services%20(EAS)%20in%20South%20Asia)

<sup>9</sup> GFRAS (2017). The New Extensionist Learning Kit. Global Forum for Rural Advisory Services, Switzerland. <http://www.g-fras.org/en/knowledge/new-extensionist-learning-kit-nelk.html>

## Box 2: Evolution of Extension Teaching in India

Extension was first introduced as a subject in Indian agricultural universities in the 1950s to train students for the position of Agricultural Extension Officer in the Community Development Programme. The position required not only training in agricultural technology but also in extension methods. Bihar Agriculture College was the first to adopt this subject in 1953.

Broadly, extension education then meant training in the philosophy and methodology of extension. With the financial support of the Ministry of Food and Agriculture, extension training expanded rapidly in the 1960s, but it was difficult to find teachers who were themselves trained in extension. The courses were often taught by economists and agriculturists with one month's training in extension. It was at this juncture that the USA started to support the development of agricultural universities in India. Its assistance included training Indian extension professors at US universities, (mainly Cornell and Wisconsin) and personal visits by US professors to India. The work of J. Paul Leagans of Cornell University still has an impress on extension courses taught at Indian universities. Extension education gradually gained importance by 1960 and began to be incorporated into other courses such as veterinary science and home science (Yadava 1981)<sup>10</sup>.

The first MSc programme in extension education was started at Bihar Agricultural College in 1955, followed by Jabalpur Agriculture College in 1957. Subsequently, most agricultural universities in India set up facilities for post-graduate instruction in the subject. The Indian Agricultural Research Institute (IARI) instituted the first doctorate programme in this subject in 1958. Now almost all State Agricultural Universities (62), Deemed Universities (5), Central Agricultural Universities (2) and Central Universities (4) with agriculture faculties either have a Department of Agricultural Extension or at least a few faculty members to teach extension education.

Source: Sulaiman (1996)<sup>11</sup>; Sulaiman and van den Ban (2000)<sup>12</sup>.

### ***New insights from communication, innovation and development studies***

The theory and practice of extension has evolved considerably in the recent past on the basis of new research in the area of diffusion, innovation and communication studies (GFRAS 2012)<sup>13</sup>. These new insights are important tools in any effort to reinvent extension to meet the evolving needs of stakeholders in the Agricultural Innovation Systems (AIS). In 2012, the Global Forum for Rural Advisory Services (GFRAS) developed a position paper clearly detailing the role of the 'New

Extensionist' in AIS and the strategies and capacities needed at each of the three levels (individual, organizational and enabling environment). In 2013, the GFRAS consortium on Extension Education and Training started a consultative process to define the core competencies required at the individual level to fulfill the role of the new extensionist. In 2017, these core competencies were incorporated (GFRAS 2017)<sup>14</sup> into a learning kit called the New Extensionist Learning Kit (NELK). However, many of these new learning materials are yet to find a place in extension curricula in India.

<sup>10</sup> Yadava J.P. (1981). Present and Proposed Curriculum in Agricultural Extension. *Journal of Rural Extension* VIII (1 & 2).

<sup>11</sup> Sulaiman R.V. (1996). Post-Graduate Curriculum in Agricultural Extension – A Synthesis. In *Social Sciences Education in Agriculture: Perspective for Future* (Selvarajan S. and Sulaiman R.V., eds.). Proceedings of a workshop by the National Institute of Agricultural Economics and Policy Research. [http://www.ncap.res.in/upload\\_files/workshop/wsp3.pdf](http://www.ncap.res.in/upload_files/workshop/wsp3.pdf)

<sup>12</sup> Sulaiman R.V. and van den Ban A.W. (2000). Reorienting Agricultural Extension Curricula in India. *The Journal of Agricultural Education and Extension*, 7:2 (69-78). DOI: 10.1080/13892240008438808

<sup>13</sup> GFRAS (2012). The New Extensionist: Roles, Strategies, and Capacities to Strengthen Extension and Advisory Services, Global Forum for Rural Advisory Services, Switzerland. <http://www.g-fras.org/en/knowledge/gfras-publications.html?download=126:the-new-extensionist-position-paper>

<sup>14</sup> GFRAS (2017). The New Extensionist Learning Kit, Global Forum for Rural Advisory Services, Switzerland. <http://www.g-fras.org/en/knowledge/new-extensionist-learning-kit-nelk.html>

## 3.2 Mechanisms for curriculum reform

In India, the UG curriculum in extension is primarily framed by the Deans Committee set up by the ICAR once in 10 years. The committee recommends the curriculum for all subjects including extension at the UG level. For instance the Fifth Deans Committee submitted its report in 2017 and its recommendations were incorporated into the 2017-18 academic programme in all universities.

As for the PG curriculum, ICAR constituted a Broad Subject Matter Area Committees (BSMAC) for the social sciences in 2008 and the current curricula taught in MSc and PhD programmes in extension are based on the document New and Restructured Post-Graduate Curricula and Syllabus (ICAR 2009)<sup>15</sup>. The BSMAC submitted its report in 2011.

## 3.3 Review of curriculum reform in extension

### Content

The importance of revising the curriculum was realized not long after extension programmes were first introduced in universities in India in the 1950s. As Y P Singh (1981)<sup>16</sup> observed, “The subject had not (yet) established its roots... when the course outline and quality of teaching became a topic of concern. In 1967 a seminar was organised at IARI where (a) model syllabus for undergraduate courses was recommended. Nothing significant was done for postgraduate courses.” A national seminar on ‘Orientation of Extension Education Curriculum and Strengthening Functional Linkages’ organised at CSAUAT Kanpur in 1981 was perhaps the first attempt to take stock of and suggest modifications to the postgraduate curriculum.

The National Workshop on Post-Graduate Teaching in Social Sciences organized at the

National Centre for Agricultural Economics and Policy Research (NCAP) in 1996 dealt in detail with curriculum needs, research training and area specialization in agricultural extension. It found that the curricula followed at the masters level were “insufficient” in the changing job scenario and “lacking in competencies” to meet the emerging professional needs and challenges. The workshop also identified critical gaps in the curricula taught at the masters level and recommended a thorough revision in its entirety. Many of the recommendations made at this workshop (NIAP 1996)<sup>17</sup> have not been implemented.

Historically the focus of agricultural extension education in India was on aspects such as the fundamentals of extension, diffusion and adoption of innovation, communication, etc. (Radhakrishna and Veerabhadraiah 2002)<sup>18</sup>. However, the current job market for extension professionals demands quite different competencies than those required when extension education was first introduced (Sulaiman and van den Ban 2000)<sup>19</sup>. Unfortunately, advances in extension models and methodologies since the late 1990s still have not found a place in the present curriculum and consequently do not attract research attention (Suchiradipta, 2017)<sup>20</sup>.

Our analysis of the PG syllabi for extension courses taught in Indian universities revealed that their scope tends to be limited to the fundamentals of extension, programme planning, extension methods, audio-visual communication, training and human resource development and sociology and psychology with no emphasis on developing expertise in any of these fields. About 50 per cent of the course contents at the PG level are a mere repetition of the subjects covered at the UG level (Sulaiman and van den Ban 2000)<sup>21</sup>. The National Academy of Agricultural Sciences (NAAS 2015)<sup>22</sup> has noted that “there is a lot of

<sup>15</sup> ICAR (2009). New and Restructured Post-Graduate Curricula & Syllabi on Social Sciences, Education Division, ICAR, New Delhi. <http://www.icar.org.in/files/edu/Revised-PG-Course-Curricula-andSyllabi/Social%20Sciences%2030.4.2009.pdf>

<sup>16</sup> Singh Y.P. (1981). On building an extension curriculum at masters level. *Journal of Rural Extension* VIII (1 & 2), 8-14.

<sup>17</sup> NIAP (1996). [http://www.ncap.res.in/upload\\_files/workshop/wsp3.pdf](http://www.ncap.res.in/upload_files/workshop/wsp3.pdf)

<sup>18</sup> Radhakrishna R.B. and Veerabhadraiah V. (2002). Revitalizing Agricultural Extension Curricula in the 21<sup>st</sup> Century: Implications for Indian Agricultural Universities. <https://www.aiaee.org/attachments/article/1282/radhakrishna375-381.pdf>

<sup>19</sup> Sulaiman R.V. and van den Ban A.W. (2000). Reorienting Agricultural Extension Curricula in India. *The Journal of Agricultural Education and Extension* 7:2 (69-78). DOI: 10.1080/13892240008438808

<sup>20</sup> Suchiradipta B. (2017). Musings of an Extensionist. Blog. <http://suchiradiptabhattacharjee.blogspot.in/>

<sup>21</sup> Sulaiman R.V. and van den Ban A.W. (2000). Reorienting Agricultural Extension Curricula in India. *The Journal of Agricultural Education and Extension* 7:2 (69-78). DOI: 10.1080/13892240008438808

<sup>22</sup> NAAS (2015). Role of Social Scientists in National Agricultural Research System (NARS), National Academy of Agricultural Sciences Strategy Paper 1, New Delhi. <https://drive.google.com/file/d/0B2ESp7vQtAoZVnhYNXFKWUNPcEk/view>

weakness in academic training in extension and the MSc/PhD training is neither producing good field professionals nor very good researchers”.

The Committee on Doubling Farmer Income (MoA&FW 2017)<sup>23</sup> in its report on ‘Empowering Farmers through Extension’ (Volume XI) articulated the need to reinvent agricultural extension with an agri-business orientation, and recommended that this process of change should begin with curricular changes in agriculture education. It goes on to say that “there is a need to revisit the agriculture education curriculum to orient it towards enhancement of farmer income. To achieve (the) desired results in terms of enhancement of farmer income, revision of the curriculum has to be handled by a set of professionals from within and outside the agriculture universities in a consultative manner. The committee recommends the constitution of a Central Board of Studies at the national level to review and regulate changes in the curriculum across all the 74 agriculture universities of the country, so that the standards and content of education in agriculture address the field-level problems of farmers. The guidelines issued by the proposed body should be reflected in the curricular reviews carried out at the level of individual universities who may further identify location-specific problems of farmers to further guide the research priorities of postgraduate and doctoral scholars”.

### ***Mismatch between curricula and employability***

The major factors contributing to the mismatch between curricula and employability of extension graduates are the inadequate attention paid to market demands and development of curricula by

unsuitable persons. Most of the universities handle their own curricular agenda without involving outside agencies. They do not collaborate with each other on handling different courses (Tamboli and Nene 2013)<sup>24</sup>. Poor linkages between universities and the labour market, the long hiatus between curriculum revisions, and centralized planning for agricultural extension are the other contributing factors (Movahedi and Nagel 2012 )<sup>25</sup>.

With jobs shrinking in the public sector, agriculture graduates are now competing for the limited opportunities emerging in NGOs and agro-input and marketing companies. However, such employers look for graduates or postgraduates with rural management, communication and marketing skills, which are lacking in agriculture students. Sensing this need, institutions like the Tata Institute of Social Sciences (TISS) have designed programmes to build skills relevant to induce change and transformation in the rural areas at the individual, group and community levels. Students are exposed to multiple pedagogies with a strong emphasis on exposure to engagement, mentoring by faculty and field-based organizations and group-based experiential learning<sup>26</sup>. At the same time, trained postgraduates are in demand for positions such as Communication Specialist, Training Specialist and Project Manager in many of the autonomous organizations set up by State Departments of Agriculture to implement their schemes and programmes (Sulaiman and van den Ban 2000)<sup>27</sup>.

The National Academy of Agricultural Sciences (NAAS 2015)<sup>28</sup> noted that “knowledge of soft skills

<sup>23</sup> MoA&FW (2017). Report of the Committee on Doubling Farmers’ Income: Empowering the Farmers through Extension and Knowledge Dissemination, Volume XI, Ministry of Agriculture & Farmers Welfare, New Delhi. <http://agricoop.gov.in/sites/default/files/DFI%20Volume%2011.pdf>

<sup>24</sup> Tamboli P.M. and Nene Y.L. (2013). Modernizing Higher Agricultural Education System in India to Meet the Challenges of 21st Century. In Proceedings of the XI Agricultural Science Congress held in 7 - 9 February, 2013.

<sup>25</sup> Movahedi R. and Nagel U.J. (2012). Identifying Required Competencies for Agricultural Extension and Education Undergraduates. [https://www.researchgate.net/profile/Reza\\_Movahedi/publication/266052204\\_Identifying\\_Required\\_Competencies\\_for\\_the\\_Agricultural\\_Extension\\_and\\_Education\\_Undergraduates/links/5870ea0308ae329d6217143e/Identifying-Required-Competencies-for-the-Agricultural-Extension-and-Education-Undergraduates.pdf](https://www.researchgate.net/profile/Reza_Movahedi/publication/266052204_Identifying_Required_Competencies_for_the_Agricultural_Extension_and_Education_Undergraduates/links/5870ea0308ae329d6217143e/Identifying-Required-Competencies-for-the-Agricultural-Extension-and-Education-Undergraduates.pdf)

<sup>26</sup> Wadkar S.K. (2018). Approaching Extension Curricula from a Development Perspective. AESA Blog. Agricultural Extension in South Asia. <http://www.aesa-gfras.net/admin/kcfinder/upload/files/BLOG%2081%20Approaching%20Extension%20Curricula%20.pdf>

<sup>27</sup> Sulaiman R.V. and van den Ban A.W. (2000). Reorienting Agricultural Extension Curricula in India. *The Journal of Agricultural Education and Extension* 7:2 (69-78). DOI: 10.1080/13892240008438808

<sup>28</sup> NAAS (2015). Role of Social Scientists in National Agricultural Research System (NARS), National Academy of Agricultural Sciences Strategy Paper 1, New Delhi. <https://drive.google.com/file/d/0B2ESp7vQtAoZVnhYNXFkVUNPcEk/view>

is missing in extension, and students are losing (out) in the job market. Due to these reasons, the discipline is not attracting the best talent. The future roles of extension scientists have to be (based) on facilitating or enabling innovation through linking different actors in the AIS. The discipline should focus on enabling innovation rather than focusing purely on technology transfer.”

### **Competencies needed by extension professionals**

The need for revitalizing the agricultural extension curriculum is not only being felt in India but has been actively articulated by the researchers across the world. Lindner et al. (2003)<sup>29</sup> reviewed the perceived key competencies of agricultural extension education graduates in 23 countries and reported that the most important competencies vary in each country. Lyons (cited by Radhakrishna and Veerabhadraiah 2002) reportedly (1988)<sup>30</sup> used the Delphi technique to identify the changes required in agricultural curriculum content and delivery methodologies in colleges of agriculture in the USA. He argued that content should include information and management (problem solving, critical thinking and decision making) as well as communication skills. With respect to delivery methodologies, the changes warranted were inclusion of more practical activities like oral presentations by students, use of case studies, etc.

Movahedi and Nagel (2012)<sup>31</sup> argued that agriculture colleges are revamping their curricula to reflect an industry perspective. After reviewing the studies of Dooley and Linder (2002)<sup>32</sup>, Graham

(2001)<sup>33</sup> and Jones (2004)<sup>34</sup>, they concluded that the most prevalent competencies desired by agribusiness companies include critical thinking, communication, knowledge of business and economics and human relationship skills.

Market-oriented agricultural extension education along with changes in agricultural marketing policies to make them relevant to national and international markets are particularly necessary in today’s context (NAAS 2015)<sup>35</sup>. The extent to which these competencies are realized and incorporated into curricula will determine how employable graduates would be (Graham 2001)<sup>36</sup>. Curriculum developers for agricultural extension education should be competent, experienced and well-informed, and should be selected from universities, labour market sectors and related organizations. In addition to redesigning the curriculum, professionals have to aggressively market the extension discipline to potential consumers (Movahedi and Nagel 2012)<sup>37</sup>.

In many education development projects the notion of outcome-based or competence-based education is taken as a starting point. Competence-based education however takes competence statements as the starting point for the design, revision or innovation of education and training programmes. Occupation and competence profiles are the foundation upon which the design of curriculum and instruction are based. Content, job and task analysis are very often the starting points for the development of comprehensive competence-based education. The results of those analyses are taken into account

<sup>29</sup> Lindner J. R., Dooley, K. E. and Wingenbach, G. J. (2003). A Crossnational study of Agricultural and Extension Education Competencies. *Journal of International Agricultural and Extension Education*, 10(1): 51-59.

<sup>30</sup> Lyons C.G. (1988). Identification of Curricular Strategies for Enhancing Undergraduate Experience in Colleges of Agriculture. Unpublished Doctoral Dissertation. University Park: The Pennsylvania State University.

<sup>31</sup> Movahedi R. and Nagel U.J. (2012). Identifying Required Competencies for the Agricultural Extension and Education Undergraduates. [https://www.researchgate.net/profile/Reza\\_Movahedi/publication/266052204\\_Identifying\\_Required\\_Competencies\\_for\\_the\\_Agricultural\\_Extension\\_and\\_Education\\_Undergraduates/links/5870ea0308ae329d6217143e/Identifying-Required-Competencies-for-the-Agricultural-Extension-and-Education-Undergraduates.pdf](https://www.researchgate.net/profile/Reza_Movahedi/publication/266052204_Identifying_Required_Competencies_for_the_Agricultural_Extension_and_Education_Undergraduates/links/5870ea0308ae329d6217143e/Identifying-Required-Competencies-for-the-Agricultural-Extension-and-Education-Undergraduates.pdf)

<sup>32</sup> Dooley K.E. and Lindner J.R. (2002). Competencies for the Distance Education Professional: A Self-Assessment to Document Professional Growth. *Journal of Agricultural Education* 43(1): 24-35.

<sup>33</sup> Graham D. (2001). Are we Preparing the Society Ready Graduates? Proceedings of the 28th Annual National Education Research Conference. New Orleans, LA. 269-281.

<sup>34</sup> Jones L.T. (2004). Academia and Industry Perspectives on Leadership and Human Resource Development Competencies Required for Agricultural Leadership Graduate Students Pursuing Industry Careers. Unpublished Doctoral Dissertation. University of Florida.

<sup>35</sup> NAAS (2015). Role of Social Scientists in National Agricultural Research System (NARS), National Academy of Agricultural Sciences Strategy Paper 1, New Delhi. <https://drive.google.com/file/d/0B2ESp7vQtAoZVnhYNXFkKWUNPcEk/view>

<sup>36</sup> Graham D. (2001). Are we Preparing the Society Ready Graduates? Proceedings of the 28th Annual National Education Research Conference. New Orleans, LA. 269-281.

<sup>37</sup> Movahedi R. and Nagel U.J. (2012). Identifying Required Competencies for the Agricultural Extension and Education Undergraduates. [https://www.researchgate.net/profile/Reza\\_Movahedi/publication/266052204\\_Identifying\\_Required\\_Competencies\\_for\\_the\\_Agricultural\\_Extension\\_and\\_Education\\_Undergraduates/links/5870ea0308ae329d6217143e/Identifying-Required-Competencies-for-the-Agricultural-Extension-and-Education-Undergraduates.pdf](https://www.researchgate.net/profile/Reza_Movahedi/publication/266052204_Identifying_Required_Competencies_for_the_Agricultural_Extension_and_Education_Undergraduates/links/5870ea0308ae329d6217143e/Identifying-Required-Competencies-for-the-Agricultural-Extension-and-Education-Undergraduates.pdf)

for making decisions regarding education and training content (Mulder 2012)<sup>38</sup>.

Competence indicates the sufficiency of knowledge and skills that enable a person to act in a wide variety of situations. In other words, competence is the ability to do something efficiently and effectively (i.e. successfully). Following the publication of the New Extensionist, the GFRAS Consortium collected extension curricula from. Several universities worldwide and conducted an analysis of the competencies they focus on. The consortium then partnered with the Association for International Agricultural Extension Education (AIAEE) Professional Development

Group to conduct surveys and hold webinars to discuss the core competencies needed in extension today. This resulted in the development of the New Extensionist Learning Kit (NELK).

In India, a workshop on capacity needs assessment (CNA) of extension and advisory service professionals held at Hyderabad in 2015 jointly with the Centre for Research on Innovation and Science Policy (CRISP), Agricultural Extension in South Asia (AESAs) and National Academy of Agricultural Research Management (NAARM) identified several capacity gaps at the individual level (Box 3).

### Box 3: Top Priority Capacity Development Areas at the Individual level in India

#### Field level

1. Communication skills including use of ICTs
2. Sound technical knowledge
3. Community mobilization, Farmer organization development and Facilitation skills

#### Middle level

1. Capacities to network, partner, establish linkages and coordinate actions of different stakeholders and achieve convergence
2. Leadership, Team building, Coaching, Mentoring and Organizing CNA of subordinate staff
3. Planning and designing need based programmes

#### Senior level

1. Policy engagement and policy advocacy including development of relevant policies and generating evidence of influence policy
2. Leadership, Organizing development, Networking, Partnership development, Regulation, Negotiation and Mentoring
3. Visioning, Strategic planning

Source: AESA (2016)<sup>39</sup>

Suvedi and Kaplowitz (2016)<sup>40</sup> developed a reference manual for frontline extension staff to use in their day-to-day work. This publication, *What Every Extension Worker Should Know: The Core Competency Handbook*, offers a set of tools for effective communication, programme planning and evaluation.

Sasidhar and Suvedi (2016)<sup>41</sup> operationalized and assessed the core competencies of livestock extension professionals in India through a survey. Their publication, *Assessment of Core Competencies of Livestock Extension Professionals in India*, would be of great interest to those who

<sup>38</sup> Mulder M. (2012). Competence-based Education and Training. *Journal of Agricultural Education and Extension* 18(3):305-314. <https://www.mmulder.nl/wp-content/uploads/2011/11/2012-Mulder-Competence-based-Education-and-Training-Editorial-JAEE-18-3.pdf>

<sup>39</sup> AESA (2016). Capacity Needs of Extension and Advisory Services (EAS) in South Asia-Policy Brief 1, Sulaiman R.V. and Mittal N, Agricultural Extension in South Asia. [http://www.aesagfras.net/workingpaper2.php?id=8&title=Policy%20Brief%20No.1:%20Capacity%20Needs%20of%20Extension%20and%20Advisory%20Services%20\(EAS\)%20in%20South%20Asia](http://www.aesagfras.net/workingpaper2.php?id=8&title=Policy%20Brief%20No.1:%20Capacity%20Needs%20of%20Extension%20and%20Advisory%20Services%20(EAS)%20in%20South%20Asia)

<sup>40</sup> Suvedi M. and Kaplowitz M.D. (2016). *What Every Extension Worker Should Know: Core Competency Handbook*, Modernizing Extension and Advisory Services Project. <https://meas.illinois.edu/wp-content/uploads/2015/04/MEAS-2016-Extension-Handbook-Suvedi-Kaplowitz.pdf>

<sup>41</sup> Sasidhar P.V.K. and Suvedi M. (2016). *Assessment of Core Competencies of Livestock Extension Professionals in India*, Modernizing Extension and Advisory Services Project. <https://meas.illinois.edu/wp-content/uploads/2016/11/MEAS-EVAL-2016-Core-Competencies-Livestock-Extension-Suvedi-and-Sasidhar-July-2015.pdf>

are keen to do a similar assessment elsewhere. The key survey questions were on the core areas, viz. specific livestock extension and subject matter competencies, technical subject matter application competencies, livestock extension programme development, implementation and evaluation competencies, communication, education and informational technology competencies, personal, professional development and diversity competencies.

### **Instructional and Delivery Methods**

Coming to instructional and delivery methods, lectures still offer only a limited scope for discussion. The traditional method of instruction, relying on age-old lecture notes, further compounds the problem. The lack of good reference materials combining theory and case studies in the Indian context, the inability of faculty to inspire and motivate young professionals and the ineffective communication skills of faculty are some of the other issues (Tamboli and Nene 2013)<sup>42</sup>.

There are several challenges in teaching agriculture extension in India. Chander (2017)<sup>43</sup> organized these challenges as follows:

- Shortage of faculty
- Teachers burdened with non-teaching activities
- Lack of induction training, which is required to orientate faculty on teaching skills
- Lack of refresher courses

- Limited opportunities for practical sessions, including field experiences
- Non-availability of standard text books on various subjects relating to extension education
- Lack of adequate field exposure for faculty
- Outdated methods, tools and techniques
- Deficient curriculum that does not relate well with contemporary needs

The National Academy of Agricultural Sciences (NAAS 2015)<sup>44</sup> noted that “there is a need to organize curricula review, initiate programmes to train teachers to teach new curricula and undertake a thorough assessment of the strengths, weaknesses and needs of the discipline in consultation with relevant stakeholders, especially those who are recruiting extension professionals/researchers. A close collaboration with the Global Forum for Rural Advisory Services (GFRAS), which is engaged in strengthening of research and training in extension, would be relevant here”.

### **The New Extensionist Learning Kit (NELK)**

The NELK was developed as a knowledge resource to support development of capacities. It contains 15 modules designed for self-directed, face-to-face or blended learning. It can be a useful, if not exclusive, tool for individual extension field staff, managers, lecturers and NGOs and other training institutions (Box 4). It was developed through a process of broad consultations, discussions and feedback from a wide range of stakeholders.

#### **Box 4: New Extensionist Learning Kit (NELK) Modules**

- |   |   |
|---|---|
| 1. Introduction to the New Extensionist                   | 9. Farmer Organization Development                                    |
| 2. Extension Approaches and Methods                       | 10. Value Chain Extension   |
| 3. Extension Programme Management                         | 11. Agricultural Entrepreneurship                                     |
| 4. Professional Ethics                                    | 12. Gender in Extension and Advisory Services                         |
| 5. Adult Education for Behavioural Change                 | 13. Risk Mitigation and Adaptation in Extension and Advisory Services |
| 6. Knowledge Management for Rural Advisory Services (RAS) | 14. Evaluation of Extension Programmes                                |
| 7. Facilitation for Development                           | 15. Policy Advocacy for RAS   |
| 8. Community Mobilization                                 |   |

<sup>42</sup> Tamboli P.M. and Nene Y.L. (2013). Modernizing Higher Agricultural Education System in India to Meet the Challenges of 21st Century. In Proceedings of the XI Agricultural Science Congress held in 7 - 9 February, 2013.

<sup>43</sup> Chander M. (2017). Teaching in Agricultural Extension Education: Can We Improve It?. Blog. Agricultural Extension in South Asia. <http://www.aesa-gfras.net/admin/kcfinder/upload/files/Blog%2067-Mahesh-Final%283%29.pdf>

<sup>44</sup> NAAS (2015). Role of Social Scientists in National Agricultural Research System (NARS), National Academy of Agricultural Sciences Strategy Paper 1, New Delhi. <https://drive.google.com/file/d/0B2ESPv7vQtAoZVnhYXfKwUNPcEk/view>

Each module of the NELK has four parts: A lecture guide, a manual, a workbook and a PowerPoint presentation. While the manual gives a detailed account of the concepts and their theoretical background, the workbook contains practical exercises. The PowerPoint presentation is intended to supplement the manual with precise

information. The lecture guide contains answers to exercises and quizzes contained in the workbook.

Efforts are currently on to mainstream the NELK in extension teaching. South Africa has successfully adopted the NELK in teaching extension at several levels (Box 5).

### **Box 5: NELK Mainstreaming: Evidence from South Africa**

#### **University of the Free State**

- The NELK has been fully adopted, adapted and further developed for 360° integration into university programmes.
- The GFRAS first outlined the module in 2015 and Dr Johan Van Niekerk started the lengthy process of accreditation, which included submission to the university's academic board as well as the South African Qualification Authority (SAQA).

#### **Undergraduate programmes**

- For the first time in the history of the University of the Free State, and South Africa at large, accredited NELK modules were integrated into the university's undergraduate programme. Usually, the Undergraduate Agriculture BSc programme has one component on communication. In this case there are eight modules that learners can choose from (some of the modules are compulsory). In some cases titles were modified or additional information was added to suit the South African context.
- All modules are accredited under the National Qualification Framework (NQF) level 7
- Two modules were integrated in 2018 as first-year compulsory subjects: Extension for Innovation (first semester) and Communication for Innovation (second semester).
- In 2019 and 2020 six more modules will be introduced: Facilitation for Development, Community Mobilization, Management of Change and Adaptation, Extension Programme Management, Agricultural Entrepreneurship and Value Chains, Adult Learning, Behavior Change and Gender.

#### **Postgraduate Programmes**

- For the advanced diploma and master's programme, some elements of the NELK kit have been integrated; for example, Introduction to the New Extensionist, and Evaluation of Extension Programme. The NELK is also used as a resource kit that students can refer to.

#### **Short learning programmes**

- Nine modules have been accredited as short learning programmes. These are a great opportunity to train field extension staff. The programme is expected to be extended to other field staff in the private sector, NGOs and others.
- According to the South African system, a number of accredited programmes can eventually lead to a qualification.
- In preparation for the short courses, University of the Free State is putting together a team of facilitators. As one of the pre-requisites, the facilitators need to enroll (via the GFRAS website) for online NELK courses of their choice. The introductory module is compulsory. The facilitators have to produce a certificate of completion, which is automatically generated. This ensures that they have gone through the material fully.

#### **Continuous Professional Development**

- In South Africa, agricultural extension is treated as a profession. Extensionists are required to acquire a certain number of CPD (Continuous Professional Development) points within a certain period. The

points can be accumulated by attending conferences, taking accredited short courses and undergoing other training as endorsed by the relevant professional body.

- Talks are underway with the agricultural extension professional body to endorse the accredited modules of the NELK for CPD points. If this works out, it will be a major breakthrough in the history of agricultural extension in South Africa.

#### **University of Pretoria**

- Elements of the New Extensionist modules 1 (Introduction to the New Extensionist) and 5 (Adult Learning for Behaviour Change) were used in the University of Pretoria block week course AGV 729 for mid-career students during the 2017 academic year.

Source: Hlami Ngwenya (personal communication), 2018.

Other universities that have started using the materials in the NELK learning kit include:

- University of Njala, Sierra Leone
- Cairo University, Egypt
- University of West Indies, Trinidad
- College of Agriculture, University of Philippines, Los Banos, Philippines

In India, efforts have been made to promote NELK among key personnel engaged in the training and

education of extension professionals. One such programme was organized in Hyderabad during 5-6 October 2017 as a collaborative effort between CRISP, MANAGE, IAEN and AESA<sup>45</sup>. It had 25 participants from government institutions such as the State Agricultural Management and Extension Training Institute (SAMETI), Directorate of Extension, Extension Education Institutes (EEI), Division of Extension Education; ICAR institutes; ATMA and SAUs; and NGOs such as PRADAN, BAIF, Deshpande Foundation and Reliance Foundation.

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<sup>45</sup> AESA (2017). Training Workshop for Promoting The New Extensionist Learning Kit. Meeting Note. Agricultural Extension in South Asia. <http://www.aesa-gfras.net/admin/kcfinder/upload/files/Meeting%20Note-56.pdf>

## 4. Extension curricula at undergraduate level

Before we delve into the curricular content of UG extension programmes, it would be worthwhile to look at the extension competencies expected of agricultural graduates. The Deans Committee (ICAR 2017)<sup>46</sup> noted that:

*“Graduates are required to possess professional capabilities to deal with the concerns of sustainable development (productive, profitable and stable) of agriculture in all aspects. Further there is need for agricultural graduates to possess knowledge skills, including ‘soft skills’ (eg: written and verbal communication ability and also entrepreneurship) to provide a class of village-based services such as advisories on new innovations, markets and avenues of development assistance for corporate and contract farming.”*

These expectations might be used to review the extension courses the Deans Committee Report has prescribed at the UG level. The committee has prescribed the following set of courses under Agricultural Extension and Communication for the four-year BSc Agriculture programme in India (Table 1).

**Table 1. Prescribed courses at the UG level to be offered by the Department of Agricultural Extension**

Agricultural Extension and Communication	Credit hours
Fundamentals of agricultural extension education	3(2+1)
Rural sociology & educational psychology	2(2+0)
Entrepreneurship development and business communication	2(1+1)
Communication skills and personality development	2(1+1)
<b>Total credits</b>	<b>9(6+3)</b>

Source: ICAR 2017

We need to look at the course content in detail to see if the Deans Committee’s expectations can be met by taking these courses. But first it is pertinent to look at how the extension curriculum at the UG level has evolved (or has not evolved) over the past four decades. Details of the courses followed since the early 1980s are given in Table 2.

A quick glance at Table 2 reveals that nothing much has changed over the past four decades in the UG curriculum for agricultural extension in India. The course on Entrepreneurship Development was added to the curriculum in 2006

(and revised in 2017) and the Communication Skills and Personality Development part of the Entrepreneurship Development and Communication Skills course was made an independent course in the 2017 revision.

In the process of evolution, the number of credit hours available for teaching core extension topics actually got reduced. Much of the course content on core extension topics has been merged into one single course, Fundamentals of Agricultural Extension Education. This course is now a mix of several topics ranging from definitions, meanings and principles of extension to programme planning, monitoring and evaluation, extension teaching methods, diffusion and adoption of innovations, etc. This course also has an overload of the history of agricultural and rural development programmes pre-Independence and post-Independence, including all the ICAR transfer of technology programmes. (Unfortunately, the extension syllabus for the Junior/Senior Research Fellowship (JRF/SRF) and Agricultural Research Service (ARS) examinations continues to have topics from this area.)

The two credits available for Rural Sociology and Educational Psychology continue but with less content/ It is mostly about definitions, concepts and meanings without clearly establishing the subject’s links to behavioural change communication.

In the case of the course on communication skills and personality development, extension faculties tend not to have any comparative advantage (special subject knowledge) in teaching much of the content (structural and functional grammar, listening and note taking, field diary and lab

<sup>46</sup> ICAR (2017). Report of the Fifth Deans Committee on Agricultural Education in India, Indian Council of Agricultural Research, New Delhi. <http://www.icar.org.in/files/FifthDeansCommiteeReport-22022017.pdf>

record, indexing, footnote and bibliographic procedures, reading and comprehension of general and technical articles, precis writing, summarizing, abstracting, etc). The faculty of a related discipline

could better deal with the subject. For instance, staff from the English Language Cell of the university can handle topics such as structural and functional grammar.

**Table 2. Suggested curricula on agricultural extension at the UG level over the past four decades**

No.	Course title	Credit hours	
		Trimester	Semester
<b>Second Deans Committee<sup>47</sup></b>			
1	Fundamentals of extension education and community development	(2+0)	(1+0)
2	Communication of agricultural technology and extension methods	(2+0)	(1+0)
3	Extension programme planning and evaluation	(2+0)	(1+0)
4	Extension field practicals		(0+3)
		<b>Total</b>	<b>6 (3+3)</b>
<b>Third Deans Committee<sup>48</sup></b>			
1	Rural sociology and educational psychology		(1+1)
2	Fundamentals of extension education and rural development		(2+1)
3	Communication and diffusion of agricultural innovations		(2+1)
		<b>Total</b>	<b>8 (5+3)</b>
<b>Fourth Deans Committee<sup>49</sup></b>			
1	Dimensions of agricultural extension		(1+1)
2	Fundamentals of rural sociology & educational psychology		(2+0)
3	Extension methodologies for transfer of agricultural technology		(1+1)
4	Entrepreneurship development and communication skills		(1+1)
		<b>Total</b>	<b>8(5+3)</b>
<b>Fifth Deans Committee<sup>50</sup></b>			
1	Fundamentals of agricultural extension education		(2+1)
2	Rural sociology & educational psychology		(2+0)
3	Entrepreneurship development and business communication		(1+1)
4	Communication Skills and Personality Development		(1+1)
		<b>Total</b>	<b>9(6+3)</b>

Similarly, the content of the course on entrepreneurship is inadequate to develop entrepreneurship skills among students or help graduates in promoting entrepreneurship among farmers.

Under the Student Ready Programme, the 10-week Rural Agricultural Work Experience (RAWEX) programme, if organized properly by the extension faculty, can impart some practical field-oriented

problem solving and communication skills to students.

Though the Deans Committee report claims that the committee “sought inputs from different stakeholders and first deliberated on the skills which graduates must possess and then did reverse engineering to design course curricula” (ICAR 2017)<sup>51</sup>, this is not reflected in the UG courses in extension. Instead the same old course

<sup>47</sup> ICAR (1981). Undergraduate Education in Agricultural Universities in India, Report by Committee of Deans, Indian Council of Agricultural Research, New Delhi.

<sup>48</sup> ICAR (1995). Report of the Third Deans Committee on Agricultural Education in India, Indian Council of Agricultural Research, New Delhi.

<sup>49</sup> ICAR (2006). Report of the Fourth Deans Committee on Agricultural Education in India, Indian Council of Agricultural Research, New Delhi. <http://www.icar.org.in/files/report.pdf>

<sup>50</sup> ICAR (2017). Report of the Fifth Deans Committee on Agricultural Education in India, Indian Council of Agricultural Research, New Delhi. <http://www.icar.org.in/files/FifthDeansCommitteeReport-22022017.pdf>

<sup>51</sup> ICAR (2017). Report of the Fifth Deans Committee on Agricultural Education in India, Indian Council of Agricultural Research, New Delhi. <http://www.icar.org.in/files/FifthDeansCommitteeReport-22022017.pdf>

content which has been in use for four or five decades continues to be in vogue --- with less time to deal with the various topics.

In general, these courses have

1. No mention of learning objectives and/or

learning outcomes

2. No list of publications (suggested reading), which many other subject areas provide.

More detailed observations on the course contents are given in Table 3.

**Table 3. Observations on the content of UG courses offered under Agricultural Extension and Communication**

No.	Title and content	Observations
1	<b>FUNDAMENTALS OF AGRICULTURAL EXTENSION EDUCATION 3(2+1)</b>	
	<p><b>Theory</b>  <b>Extension education:</b> Meaning, definition, scope and process; objectives and principles of extension education.  <b>Extension programme planning:</b> Meaning, process, principles and steps in programme development.  <b>Extension systems in India:</b> Extension efforts in pre-Independence era (Sriniketan, Marthandam, Firka Development Scheme, Gurgaon Experiment, etc.) and post-Independence era (Etawah Pilot Project, Nilokheri Experiment, etc.); various extension/ agriculture development programmes launched by ICAR/government of India (IADP, IAAP, HYVP, KVK, IVLP, ORP, ND,NATP, NAIP, etc.).  <b>New trends in agriculture extension:</b> Privatization of extension, cyber extension/e-extension, market-led extension, farmer-led extension, expert systems, etc.  <b>Rural development:</b> Concept, meaning, definition; various rural development programmes launched by the government of India;  <b>Community development (CD):</b> Meaning, definition, concept and principles, philosophy of CD.  <b>Rural leadership:</b> Concept and definition, types of leaders in the rural context.  <b>Extension administration:</b> Meaning and concept, principles and functions.  <b>Monitoring and evaluation:</b> Concept and definition, monitoring and evaluation of extension programmes.  <b>Transfer of technology (TOT):</b> Concept and models, capacity building of extension personnel  <b>Extension teaching methods:</b> Meaning, classification, individual, group and mass contact methods.  <b>ICT applications in TOT:</b> New and social media, media mix strategies  <b>Communication:</b> Meaning and definition; principles and functions of communication, models and barriers to communication; agriculture journalism.  <b>Diffusion and adoption of innovation:</b> Concept and meaning, process and stages of adoption, adopter categories.  <b>Practical</b>            Getting acquainted with the university extension system: group discussion exercise; handling and use of audio-visual (AV) equipment, digital camera and LCD projector; preparation and use of AV aids; preparation of extension literature – leaflets, booklets, folders, pamphlets; news stories and success stories; presentation skills exercise; micro teaching exercise; visit to village to understand the problems encountered by villagers/farmers; study organization and functioning of DRDA and other development departments at the district level; visit to NGOs and learning from their experience in rural development; understanding PRA techniques and their application in village development planning; exposure to mass media: visit to community radio and TV studio to understand the process of programme production; script writing, writing for print and electronic media, developing scripts for radio and television.</p>	<p><b>General observations:</b> 20-22 lecture hours of (theory) is inadequate to do justice to the topic. In general too much focus on meanings, definitions, scope, objectives and principles.  <b>Specific observations</b>  <i>Undue focus on past agricultural and rural development programmes. They should ideally be marked as essential reading and not taught in class.</i>            There is a need to review these topics keeping in view:            - Credit hours available to do justice to each topic            - Use of varied instructional techniques other than lectures            - First identify the core extension competencies needed by graduate students; then review the existing content and add more relevant contents.            - Demand more credits to do justice to help graduates become good planners, community mobilizers, facilitators, communicators in the rural sector.</p>

2	<p><b>RURAL SOCIOLOGY &amp; EDUCATIONAL PSYCHOLOGY 2(2+0)</b></p> <p><b>Theory</b>  <b>Sociology and rural sociology:</b> Definition and scope, significance in agriculture extension, rural society, social groups, social stratification, culture concept, social institution, social change and development.  <b>Educational psychology:</b> Meaning and importance in agriculture extension: behaviour: cognitive, affective, psychomotor domain, personality, learning, motivation, theories of motivation, intelligence.</p>	<p><b>General observations:</b> Too much focus on definitions, meanings, etc  There is a need to link this topic to behavioral change communication and how these concepts are used at the field level.  There is a need to teach this course in a more applied form. For instance relate it to challenges in relation to power, access to resources, rights, poverty and well-being, environmental change.</p>
3	<p><b>ENTREPRENEURSHIP DEVELOPMENT AND BUSINESS COMMUNICATION 2 (1+1)</b></p> <p><b>Theory</b>  Concept of entrepreneur, entrepreneurship development, characteristics of entrepreneurs; SWOT analysis &amp; achievement motivation; government policy and programmes and institutions for entrepreneurship development; impact of economic reforms on agribusiness/agri enterprises; entrepreneurial development process; business leadership skills.  Developing organizational skills (controlling, supervising, problem solving, monitoring &amp; evaluation).  Developing managerial skills, business leadership skills (communication, direction and motivation skills), problem-solving skills; supply chain management, total quality management,  Project planning formulation and report preparation;  Financing of enterprise; opportunities for agri-entrepreneurship and rural enterprise.  <b>Practical</b>  Assessing entrepreneurial traits, problem-solving skills, managerial skills and achievement motivation, exercise in creativity, time audit through planning, monitoring and supervision, identification and selection of business ideas, preparation of business plans and proposal writing, visit to entrepreneurship development institute and entrepreneurs.</p>	<p><b>General observations:</b> There is need for more clarity on the objectives of this course. Is it to turn students into entrepreneurs? Or is to help students promote entrepreneurship among farmers? The course content fails short on both counts.  <b>Specific observations:</b> Ideally the content should have the following:  - Competencies and skills needed to run a business  - Identifying market opportunities  - Managing finances and assessment of risks  - Record keeping</p>
4	<p><b>COMMUNICATION SKILLS AND PERSONALITY DEVELOPMENT 2 (1+1)</b></p> <p><b>Theory</b>  <b>Communication Skills:</b> Structural and functional grammar; meaning and process of communication; verbal and nonverbal communication; listening and note-taking, writing skills, oral presentation skills; field diary and lab record; indexing, footnote and bibliographic procedures; Reading and comprehension of general and technical articles; precis writing, summarizing, abstracting; Individual and group presentations; impromptu presentation; public speaking; group discussion; organizing seminars and conferences.  <b>Practical</b>  Listening and note-taking, writing skills, oral presentation skills; field diary and lab record; indexing, footnote and bibliographic procedures; reading and comprehension of general and technical articles.</p>	<p><b>General observations:</b> This is not a communication course in the conventional sense. Grammar would have been dealt better by a teacher from the English Department.  Much of the content (eg: field diary and lab record; indexing, footnote and bibliographic procedures; reading and comprehension of general and technical articles; precis writing, summarizing, abstracting) is more relevant for postgraduate/ research students. It is not clear why limited credit hours have been earmarked for these topics.</p>

Given such a diffused content that has been followed without much change for three decades, it is unlikely that students will emerge with the core competencies required to perform extension functions.

## 5. Extension curricula at postgraduate level

Before we go into the details of the extension curriculum at the postgraduate level, it would be useful to define the purpose of the MSc extension course -- which remains unclear to us and to many with whom we interacted.

*What is the purpose of the PG programme in agricultural extension?*

- Is it to produce extension researchers/faculty who will do research on knowledge promotion and teach extension in the universities?
- Is to produce professional extension managers who can lead programmes, coordinate, monitor and evaluate extension interventions?
- Or are we trying to achieve both of the above objectives?

Our assessment is that these courses are neither producing good social science/extension researchers (because research training remains very weak, a point articulated by several authors<sup>52</sup> in the AESA blog) nor producing good extension/rural development professionals who can compete with the rural/agri Master of Business Administration (MBA) students or Masters of Arts (MA) Development/Master of Social Work (MSW) students graduating from esteemed institutions in India.

These courses have not changed much over a few decades. Moreover, students are being taught several subjects without any scope for specializing in any particular field. So those graduating from MSc Agricultural Extension programmes are not considered proficient enough to be good researchers, capacity development specialists, communication officers or innovation managers.

In 1996, while reviewing the extension courses offered by 12 universities in India, Sulaiman (1996)<sup>53</sup> noted that many of the topics included in the PG curriculum were a repetition of what had already been covered --- or should ideally have been covered -- in the UG curriculum. For example, almost all the topics covered under course outlines like 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 was included under Programme Planning, Fundamentals of Communication and Diffusion and Adoption of Innovation were all repetitions of the UG curricula in many of the universities. Such repetitions accounted for about 50 per cent of the course content at the PG level. He also pointed out a lack of focus (a limited number of courses with no scope for developing expertise in any field) and no scope for specialization. The NCAP Workshop identified three major areas of specialization,

<sup>52</sup> Sethuraman P.S. (2013). Research in Extension: New tools to reinvent its future. Blog. Agricultural Extension in South Asia. <http://www.aesa-gfras.net/Resources/file/Blog%204%20Enhancing%20the%20potential%20of%20quality%20videos%20for%20farmers.pdf>

Prasad R.M. (2013). Research in Extension: It is time to introspect. Blog. Agricultural Extension in South Asia.

<http://www.aesa-gfras.net/Resources/file/Blog%205-Research%20in%20Extension%20It%20is%20time%20to%20introspect.pdf>

Gowda M.J., Dixit S., Burman R.R. and Ananth P.N. (2014). Extension research and technology development. Blog. Agricultural Extension in South Asia. [http://www.aesa-gfras.net/Resources/file/FINAL-M\\_J\\_Chandre%20Gowda-13-FEB.pdf](http://www.aesa-gfras.net/Resources/file/FINAL-M_J_Chandre%20Gowda-13-FEB.pdf)

Prasad R.M. (2014). Extension Research: Random thoughts from a well-wisher. Blog. Agricultural Extension in South Asia.

<http://www.aesa-gfras.net/Resources/file/Prasad%20Sir-%20Blog%2039-FINAL.pdf>

Rao S.V.N., Natchimuthu K. and Ramkumar S. (2014). Scientific publishing in extension: Are we doing enough and are we doing well?. Blog. Agricultural Extension in South Asia.

<http://www.aesa-gfras.net/Resources/file/Blog%2040.pdf>

Sethuraman P.S. (2015). Negotiating reality: A pragmatic approach for conducting quality extension research. Blog. Agricultural Extension in South Asia. [http://www.aesa-gfras.net/Resources/file/RSeds-12FEB-2015%20final%20over%20Blog%2044%20\(1\).pdf](http://www.aesa-gfras.net/Resources/file/RSeds-12FEB-2015%20final%20over%20Blog%2044%20(1).pdf)

Sethuraman P.S. (2015). New advances in extension research methodologies-PART 1. Blog. Agricultural Extension in South Asia.

<http://www.aesa-gfras.net/Resources/file/Blog%2049-1June-Sethuraman.pdf>

Vishnu S. and Gupta J. (2015). Towards extension education reforms 2.0: The realities, expectations and imperatives. Blog.

Agricultural Extension in South Asia. <http://www.aesa-gfras.net/Resources/file/Blog%2052.pdf>

<sup>53</sup> Sulaiman R.V. (1996). Post-Graduate Curriculum in Agricultural Extension – A Synthesis. In Social Sciences Education in Agriculture: Perspective for Future (Selvarajan S. and Sulaiman R.V., eds.). Proceedings of a workshop by the National Institute of Agricultural Economics and Policy Research. [http://www.ncap.res.in/upload\\_files/workshop/wsp3.pdf](http://www.ncap.res.in/upload_files/workshop/wsp3.pdf)

namely, extension management, development communication and human resource management and training that could be offered in the MSc agricultural extension curriculum. Some of those areas may not be relevant today, but there is certainly a need for greater specialization at the master's level.

Details of the MSc extension curricula suggested by the Broad Subject Matter Area Committees (BSMAC) for Social Sciences in 2001 and 2009 are given in Box 6 and Box 7 respectively.

#### **Box 6. Courses prescribed for MSc Agricultural Extension by ICAR (2001)<sup>54</sup>**

##### **Major Courses (20-25 credits)**

##### **A.1 Core Courses (12 credits)**

1. Fundamentals of Extension Education (2+0)
2. Fundamentals of Rural Sociology (2+1)
3. Psychology of Human Behaviour (2+0)
4. Methods of Social Science Research (2+1)
5. Process and Methods of Communication (1+1)
6. Seminar (0+1)

##### **A.2 Optional Courses (7-12 credits)**

1. Programme Planning in Extension (1+1)
2. Management in Extension (1+1)
3. Managerial Skills for Extension Professionals (1+1)
4. Diffusion and Adoption of Innovations (1+1)
5. Agricultural Journalism (1+1)
6. Visual and Graphic Communication (1+1)
7. Communication Media and Information Technology (1+1)
8. Training for Human Resource Development (2+1)
9. Training Methodology (1+1)
10. Entrepreneurship Development (1+1)

##### **B. Supporting Courses (10-15 credits)**

To be decided by the Students Advisory Committee depending on specialization of the student.

##### **Total 35 credits**

<sup>54</sup> ICAR (2001). Curricula and Syllabi For Master's Degree Programme in Agricultural Economics & Agricultural Extension, Accreditation Board Secretariat Education Division, Indian Council of Agricultural Research, Krishi Anusandhan Bhavan-li, Pusa. New Delhi 110 012. <http://www.icar.org.in/files/mAecn.pdf>

### Box 7. Courses prescribed for MSc Agricultural Extension by ICAR (2009)<sup>55</sup>

Ext 501*	Development Perspectives of Extension Education (1+1)
Ext 502*	Development Communication & Information Management (2+1)
Ext 503*	Diffusion and Adoption of Innovations (2+1)
Ext 504*	Research Methods In Behavioral Sciences (2+1)
Ext 505*	E-Extension (2+1)
Ext 506*	Entrepreneurship Development and Management In Extension (2+1)
Ext 507*	Human Resource Development (2+1)
Ext 508	Visual Communication (2+1)
Ext 509	Participatory Methods for Technology Development and Transfer (1+1)
Ext 510	Gender Sensitization for Development (2+1)
Ext 511	Perspectives of Distance Education (2+0)
Ext 512	Market-led Extension (2+0)
Ext 591	Master's Seminar (1+0)
Ext 599	Master's Research 20

\* Core courses

A comparison of the courses listed in Boxes 6 and 7 clearly reveals that nothing much changed in the curricula between 2001 and 2009. As pointed out earlier, a National Workshop on Post-Graduate Teaching in Social Sciences organised at NCAP in 1996 dealt in detail with curricular needs, research training and area specialization in agricultural extension. The workshop found the curricula followed at the Master's level to be "insufficient" in view of the changing job scenario and "lacking in competencies" to meet the emerging

professional needs and challenges. The same situation prevails even now, two decades later, though several publications are currently available for extension practitioners to learn from<sup>56</sup>.

We reviewed the content of the PG Agricultural Extension courses offered by 16 Indian universities (Table 4).

<sup>55</sup> ICAR (2009). New and Restructured Post-Graduate Curricula & Syllabi on Social Sciences, Education Division, ICAR, New Delhi. <http://www.icar.org.in/files/edu/Revised-PG-Course-Curricula-and-Syllabi/Social%20Sciences%2030.4.2009.pdf>

<sup>56</sup> Vishnu S. and Sulaiman R.V. (2017). 50 publications every extension professional should read. Blog. Agricultural Extension in South Asia. <http://www.aesagfrs.net/admin/kcfinder/upload/files/Final%20Blog%2075.pdf>

**Table 4. Analysis of PG extension curricula followed in 16 universities in India**

No.	Course	IARI	NDRI	UASD	UBKV	PJTSAU	BHU	SKUAS&T	KAU	AAU	OUAT	PAU	TNAU	HAU	CSKH	GB PANT	BUJ
1	Fundamentals of Extension																
2	Psychology																
3	Communication																
4	Diffusion and Adoption of Innovations																
5	Training and HRD																
6	Market-led Extension																
7	Agricultural Extension Management and Entrepreneurship																
8	Development Communication																
9	Rural Sociology																
10	E-Extension/ICT in Extension																
11	Participatory Methods and TOT																
12	Research Methodology																
13	Visual and Graphic Communication																
14	Gender and Extension																
15	Distance Education																
16	Agricultural Journalism																
17	Programme Planning in Extension																
18	Agricultural Extension Policy																
19	Qualitative Research Methods																
20	Group Dynamics																
21	Managerial Skills of Extension Professionals																
22	Trends in Extension Education																
23	Media Production and Management																
24	Publication, Editing and Production																
25	Advertising and Public Relations																

Note: The cells in color denote that the particular university is offering that specific course.

IARI: Indian Agricultural Research Institute, New Delhi; NDRI: National Dairy Research Institute, Karnal; UASD: University of Agricultural Sciences, Dharwad; UBKV: Uttar Banga Krishi Viswavidyalaya, Cooch Behar; PJTSAU: Professor Jayashankar Telangana State Agricultural University, Hyderabad; BHU: Banaras Hindu University, Varanasi; SKUAS&T: Sher-e-Kashmir University of Agricultural Sciences and Technology, Kashmir; KAU: Kerala Agricultural University, Thrissur; AAU: Anand Agricultural University, Anand; OUAT: Odisha University of Agriculture and Technology, Bhubaneswar; PAU: Punjab Agricultural University, Ludhiana; TNAU: Tamil Nadu Agricultural University, Coimbatore; HAU: Haryana Agricultural University, Hisar; CSKH: CSK Himachal Pradesh Krishi Vishwavidyalaya, Palampur; GB PANT: GB Pant University of Agriculture and Technology, Pant Nagar; BUJ: Bundelkhand University, Jhansi.

A detailed analysis of the extension curricula prescribed by ICAR (2009) is given in Table 5.

**Table 5. Content of postgraduate courses on Agricultural Extension suggested by ICAR (2009)**

Title and content	Observations
<b>EXT 501: DEVELOPMENT PERSPECTIVES OF EXTENSION EDUCATION (1+1)</b>	
<p><b>Objective:</b> The course is intended to orient students on the concept of extension education and its importance in agricultural development. It also aims to expose them to various rural development programmes aimed at poverty alleviation and employment generation. The students learn about new innovations in agricultural extension in India.</p> <p><b>Theory</b></p> <p><u>UNIT I</u></p> <p><b>Extension Education:</b> Meaning, objectives, concepts, principles and philosophy. Critical analysis of definitions. Extension education as a profession. Adult education and distance education.</p> <p><u>UNIT II</u></p> <p>Pioneering extension efforts and their outcomes in India. Analysis of the extension systems of ICAR and SAU, states and NGOs. Role of extension in an agricultural university.</p> <p><u>UNIT III</u></p> <p><b>Poverty Alleviation Programmes:</b> SGSY, SGRY, PMGSY, DPAP, DDP, CAPART; Employment generation programmes – NREGP. Women development programmes – ICDS, MSY, RMK. Problems in rural development.</p> <p><u>UNIT IV</u></p> <p><b>Current Approaches in Extension:</b> Decentralized decision making, bottom-up planning, farming system approach, farming situation-based extension, market-led extension, Farm Field School, ATIC, Kisan Call Centres, NAIP.</p> <p><b>Practical</b></p> <p>Visit to gram panchayat to study ongoing rural development programmes. Visit to KVK, NGO and extension centres of State Agricultural Universities and state departments. Bottom-up planning, report preparation and presentations.</p>	<p><b>General observations:</b> All these topics are already covered at the UG level under the course Fundamentals of Agricultural Extension Education with three credits. There is no need to have this course at the PG level.</p> <p>Scrapping this course will release two credits for more relevant content in a new course.</p> <p>It would have been useful if the content is organized on the basis of how the extension system co-evolved (extension research, teaching and service) and how they complement each other.</p> <p>Students go through this at the UG level in the Fundamentals course and also under RAWE.</p>

## EXT 502: DEVELOPMENT COMMUNICATION AND INFORMATION MANAGEMENT (2+1)

**Objective:** Students learn the concept, meaning and process of communication and the various methods of the modern media of communication. They also learn information management and journalistic writing.

### Theory

#### UNIT I

**Communication Process:** Concept, elements and their characteristics. Models and theories of communication, communication skills. Fidelity of communication, communication competence and empathy, communication effectiveness and credibility, feedback in communication. Social networks and development communication. Barriers in communication. Message – meaning, dimensions of a message, characteristics of a good message, message treatment and effectiveness, distortion of message.

#### UNIT II

**Methods of Communication:** Meaning and functions, classification. Forms of communication – oral and written communication, nonverbal communication, interpersonal communication, organizational communication. Key communicators – meaning, characteristics and role in development.

#### UNIT III

**Media in Communication:** Role of mass media in dissemination of farm technology. Media mix for rural people. Modern communication media – electronic, video, teletext, teleconferencing, computer-assisted instruction, computer technology and its implications.

#### UNIT IV

**Agricultural Journalism:** Its form and role in rural development. Basics of writing – news stories, features, magazine articles, farm bulletins and folders; techniques of collection of materials for news stories and feature articles; rewriting – art of clear writing, readability and comprehension testing procedures; photojournalism, communicating with pictures, radio and TV journalism, techniques of writing scripts for radio and TV.

**General observations:** Too basic for a PG course. The concept, meaning, definitions, etc. should be background reading rather than main course material.

**Specific observations:** Units 1 and 2 are pitched at a lower level for MSc graduates. Most of the contents outlined are already introduced to the scholar at the BSc level.

Most of the contents of Unit III (teletext, electronic video, CAI) are outdated.

This should be a more applied course with focus on communication for innovation and development and the role of extension personnel as facilitators of knowledge flows and interaction among different actors in the Agricultural Innovation System. The following topics should be included:

Changing role of communicators from disseminators of information (the current focus is more on top-down communication) to facilitators of interaction and as agents carrying out a wide range of intermediation tasks at interfaces within and between networks of stakeholders.

Network building, supporting social learning and dealing with the dynamics of power and conflict.

Communication for policy change.

Make agricultural Journalism an optional course with more detailed content designed for interested students.

Benchmarking the course with the Wageningen PG course 'Facilitating Interactive Processes' would help to significantly improve the contents.

## EXT 503: DIFFUSION AND ADOPTION OF INNOVATIONS (2+1)

**Objective:** Students learn how agricultural innovations spread among farmers in society. They study the diffusion and adoption process, the stages in the adoption and innovation decision process, adopter categories and their characteristics, opinion leaders and their characteristics, attributes of innovation, and factors influencing adoption.

### Theory

#### UNIT I

Diffusion concept and meaning. Traditions of research on diffusion. Generation of innovations. Tracing the innovation development process, converting research into practice.

#### UNIT II

Adoption process – concept and stages of adoption, dynamic nature of stages, covert and overt processes, the innovation-decision process. Critical appraisal of the new formulation.

#### UNIT III

Adopter categories – Innovativeness and adopter categories, adopter categories as ideal types, characteristics of adopter categories; perceived attributes of Innovation and their rate of adoption, factors influencing rate of adoption.

#### UNIT IV

Diffusion effect and concept of overadoption. Opinion leadership – measurement and characteristics of opinion leaders, monomorphic and polymorphic opinion leadership. Multi-step flow of innovation; concepts of homophily and heterophily and their influence on flow of innovations. Types of innovation decisions – optional, collective and authority –and contingent innovation decisions; consequences of innovation decisions –desirable or undesirable, direct or indirect, anticipated or unanticipated consequences. Decision making – meaning, theories, process, steps, factors influencing decision-making.

### Practical

Case studies on the individual and community adoption process; content analysis of adoption studies; identification of adopter categories; study of attributes of current farm technologies; sources of information at different stages of adoption; study of factors increasing or retarding the rate of adoption; presentation of reports on adoption and diffusion of innovations.

**General observations:** This course is completely based on Rogers' publication Diffusion of Innovations. Several new insights on the process are available globally<sup>57</sup> and several alternative theories supplementing this conceptual paradigm are available. These are yet to figure in this course.

Similarly, there is no mention of Agricultural Innovation Systems (AIS) and the role of extension in AIS and how extension could support upscaling new knowledge and achieving impact.

There are a lot of opportunities for specialists in innovation studies and those who can support upscaling to achieve impact. There is also a need for capacity development specialists with a systems perspective.

The narrow focus on Rogers' Diffusion of Innovation ideas constrain postgraduates from getting selected for such positions.

<sup>57</sup> Bhatt A. (2018). Beyond Rogers: Diffusion of innovation and extension curricula. Blog. Agricultural Extension in South Asia. <http://www.aesa-gfras.net/admin/kcfinder/upload/files/Blog%2079.pdf>.

## EXT 504: RESEARCH METHODS IN BEHAVIOURAL SCIENCE (2+1)

**Objective:** This course is designed to impart knowledge of behavioural sciences research methods. The student learns the Statistical Package for Social Sciences (SPSS) to choose the appropriate statistics for data analysis.

### Theory

#### UNIT I

Behavioural sciences research – meaning, concept and problems. Types and methods of research – fundamental, applied and action research, exploratory, descriptive, diagnostic, evaluation, experimental, analytical, historical, survey and case study. Review of literature – need, search procedure, sources of literature, planning the review work. Research problem – selection and formulation of research problem and guiding principles in the choice of research topic; factors and criteria in selection of research problem, statement of research problem and development of theoretical orientation of research problem.

#### UNIT II

Objectives – meaning, types and criteria for judging the objectives. Concept and construct – meaning, role of concepts in research and conceptual framework development in research. Variable – meaning, types and role in research. Definition – meaning, characteristics of workable definitions, types and their role in research. Hypothesis – meaning, importance and functions of hypotheses in research, types of hypothesis, linkages, sources, problems in formulation and criteria for judging a workable hypothesis. Measurement – meaning, postulates and levels of measurement; use of appropriate statistics at different levels of measurement, criteria for judging the measuring instrument and importance of measurement in research. Validity – meaning and methods of testing. Reliability – meaning and methods of testing. Sampling – universe, sample and sampling meaning, basis for sampling, advantages and limitations, size and factors affecting the size of the sample and sampling errors. Methods of elimination and minimizing, Maximincon Principle. Sampling – types of sampling and sampling procedures.

**General observations** (source: Dr P Sethuraman Sivakumar, *personal communication*)

“Comprehensive coverage of almost all aspects of conducting extension research except the following:

Paradigms which actually guide the nature and type of research (*included in the AESA-CRISP-NAARM-CTCRI-MANAGE Manual on Good Practices in Extension Research and Evaluation 2017*)

The types and methods of research are not clearly specified. The terms seem to have been compiled from various sources without awareness that they are overlapping (see the manual cited above for more detail).

Methods of identifying concepts, constructs, variables and hypotheses are not included. This is a very important component of extension research as it provides clarity on concepts, constructs and variables, and establishes how they are different from each other, how they are related, etc.

Lack of data exploration and preparation and bias in data collection

Though the syllabus looks comprehensive, the methods described under different topics are obsolete (eg: Judges’ rating for identification of variables, low, medium and high classification, reliability and validity estimation procedures, etc).

<p><b>UNIT III</b>  Research design – meaning, purpose and criteria for research design; types, advantages and limitations of each design. Experimental design – advantages and limitations. Data collection devices: interviews – meaning, purpose, types, techniques of interviewing and advantages and limitations; enquiry forms and schedules – meaning, types of questions, steps in construction and advantages and limitations; questionnaires – meaning, difference between schedule and questionnaire, types of questions to be used, pretesting of questionnaires or schedules and advantages and limitations; check lists – meaning, steps in construction, advantages and limitations; rating scales – meaning, types, limits in construction, advantages and limitations; observation – meaning, types, tips on observation, advantages and limitations; case studies – meaning, types, steps in conducting, advantages and limitations; social survey – meaning, objectives, types and steps in conducting a survey, advantages and limitations.</p> <p><b>UNIT IV</b>  Data processing – meaning, coding, preparation of master code sheet, analysis and tabulation of data; Statistical Package for Social Sciences (SPSS) to choose appropriate statistics for data analysis based on the level of measurement of variables. Report writing – meaning, guidelines to be followed in scientific report writing. References in reporting.</p> <p><b>Practical</b>  Selection and formulation of a research problem – formulation of objectives and hypothesis; selection of variables based on objectives; developing the conceptual framework of research; operationally defining the selected variables. Development of data collection devices. Testing the validity and reliability of data collection instruments. Pretesting of data collection instrument. Techniques of interviewing and collection of data. Data processing, hands-on experience on SPSS, coding, tabulation and analysis. Formulation of secondary tables based on objectives of research. Writing reports, writing theses and research articles. Presentation of reports.</p>	<p>Besides, it is essential to understand the full process comprehensively in a sequential way.</p> <p>Most of the syllabus is very academic. It is essential to equip teachers of research methodology to teach in a more practical way while equipping the students with field knowledge.</p>
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## EXT 505: E-EXTENSION (2+1)

### Objective

Students are taught the concepts behind information and communications technologies (ICT) and how these tools can be used in Agricultural Extension. Besides, they are exposed to various ICT projects that were successful in delivering services and transferring technology.

### Theory

#### UNIT I

ICT – Concept, definition, tools and application in extension education. Reorganizing the extension efforts using ICT; advantages, limitations and opportunities.

#### UNIT II

ICT projects and case studies in India and the developing world. Different approaches (models). ICT use in extension – expert systems on selected crops and enterprises; self-learning CDs on package of practices, diseases and pest management; agricultural web sites and portals related crop production and marketing, etc.

#### UNIT III

Community radio, web, tele and videoconferencing. computer-aided extension. knowledge management, information kiosks, multimedia. Online, offline extension. Tools – Mobile technologies, e-learning concepts.

#### UNIT IV

ICT extension approaches –prerequisites, information and science needs of farming community; need integration; human resource information; intermediaries. Basic e-extension training issues. ICT-enabled extension pluralism. Emerging issues in ICT.

### Practical

Content analysis of agricultural ICT projects. Handling of ICT tools. Designing extension content. Online extension service. Project work on ICT-enabled extension. Creation of extension blogs. Visits to ICT extension projects.

**General observations:** Many of the ICT tools and approaches outlined in these courses are already outdated. Hence there is need for an overhaul of content.

Ideally, the curriculum should include the latest developments in ICT (Internet of Things, cloud computing, data-driven extension services, etc). The AESA blog, “Disruptive Technologies – Big Data and Internet of Things in Strengthening Extension & Advisory Services”<sup>58</sup> provides valuable insights in this regard.

ICT project-based case studies may be useful in discussing the pros and cons of this particular approach rather than limiting the discussion to project objectives.

The syllabus fails to portray ICT as a part of the larger knowledge management system. The topics are discussed as if ICT technologies are standalone and give less emphasis on the role of knowledge intermediaries and integrated approaches.

Practical aspects in this course are often very weak. Rarely do students get an opportunity to undergo any kind of practical experience as outlined in the syllabus.

<sup>58</sup> Meera S. (2017). Disruptive technologies - Big data and Internet of Things in strengthening extension & advisory Services. Blog. Agricultural Extension in South Asia. <http://www.aesa-gfras.net/admin/kcfinder/upload/files/AESA%20Blog-68-March%202017.pdf>

## EXT 506:ENTREPRENEURSHIP DEVELOPMENT AND MANAGEMENT IN EXTENSION (2+1)

### Objective

The first part of this course is intended to provide an overall picture of planning and development of enterprises to promote sustainable livelihoods for rural people. The second part is structured to help students gain knowledge and skills in different concepts and techniques of management in extension organizations.

### Theory

#### UNIT I

Entrepreneurship – concept, characteristics, approaches, theories, need for enterprises development. Agri-entrepreneurship – concept, characteristics, nature and importance for sustainable livelihoods. Traits of entrepreneurs – risk-taking, leadership, decision-making, planning, organizing, coordinating and marketing, types of entrepreneurs. Stages of establishing an enterprise – identification of a sound enterprise, steps to be considered in setting up an enterprise, feasibility report, product selection, risk and market analysis, legal requirements. Project management and appraisal – market, technical, financial, social appraisal.

#### UNIT II

Microenterprises – profitable agri enterprises in India, agro processing, KVIC industries. Microfinancing – meaning, sources of finance, banks, small-scale industries development organizations. Marketing for enterprises – concept, planning for marketing, target marketing, competition, market survey and strategies, product sales and promotion. Gender issues in entrepreneurship development – understanding gender and subordination of women, gender as a development tool, policy approaches for women entrepreneurship development. Success and failure stories – issues relating to success and failure of enterprises – personal, production, finance, social, marketing.

**General observations:** We need to review the entrepreneurship content here with what is covered at the UG level.

This course needs different content that covers topics such as business incubation, intellectual property management, technology licensing and management, technology commercialisation, consultancy and handholding, etc. which are not covered at the UG level.

The AESA blogs, Building Entrepreneurship through Agricultural Universities and Research Institutes, by Sivakumar (2018)<sup>59</sup> and Agribusiness Incubation in India: Ways Forward, by Srinivas (2016)<sup>60</sup> may give more insights in this regard.

Unit III requires major revision. The contents should be discussed in the context of their relevance to agricultural extension. Other important topics which may be included are

Mentoring

Time management

Team work and team-building strategies

Unit II is comparatively more focused and does justice to the course title. However, more content can be included such as developing business ideas, case diagnosis of skills and competencies needed to run an enterprise, market-mapping techniques risk assessment, etc. The AESA blog, 'Fostering Entrepreneurship through Agribusiness Incubation: Role of Extension Professionals'<sup>61</sup> may give more insights in this direction.

Most of the contents of Unit III and IV have less focus on agricultural extension management per se. The contents are designed and discussed more in the direction of a pure management course rather than agricultural management. Many topics like theories of management, principles and methods can be offered as resources for further reading.

<sup>59</sup> Sivakumar P.S. (2018). Building entrepreneurship through agricultural universities and research institutes. Blog. Agricultural Extension in South Asia. <http://www.aesa-gfras.net/admin/kcfinder/upload/files/AESA%20BLOG%2083%20APRIL%202018.pdf>

<sup>60</sup> Srinivas K. (2016). Agribusiness incubation in India: Ways forward. Blog. Agricultural Extension in South Asia. <http://www.aesa-gfras.net/admin/kcfinder/upload/files/Blog%2057.pdf>

<sup>61</sup> Sivakumar P.S. and Sivaraman I. (2014). Fostering entrepreneurship through agribusiness incubation: Role of extension professionals. Blog. Agricultural Extension in South Asia. <http://www.aesa-gfras.net/admin/kcfinder/upload/files/Blog%2033%20ABI.pdf>

### UNIT III

Management – meaning, concept, nature and importance; approaches to management, levels of management, qualities and skills of a manager. Extension management – meaning, concept, importance, principles of management; classification of functions of management. Planning – concept, nature, importance, types; making planning effective. Change management – factors, process and procedures. Decision-making (DM) – concept, types of decisions, styles and techniques of decision-making, steps in DM process; guidelines for making effective decisions. Organizing – meaning of organization, concept, principles, organizational structure, span of management, departmentalization, authority and responsibility; delegation and decentralization, line and staff relations.

### UNIT IV

Coordination – concept, need, types, techniques of coordination; interpersonal relations in the organization. Staffing – need and importance, manpower planning, recruitment, selection, placement and orientation, training and development. Performance appraisal – meaning, concept, methods. Direction – concept, principles, requirements of effective direction, giving orders, techniques of direction. Leadership – concept, characteristics, functions, approaches to leadership; leadership styles. Organizational communication – concept, process, types, networks, barriers to communication. Managing work motivation – concept, motivation and performance; approaches to motivation. Supervision – meaning, responsibilities, qualities and functions of supervision; essentials of effective supervision. Managerial control – nature, process, types, techniques of control, budgeting, observation, PERT and CPM, MIS.

#### **Practical**

Field visits to successful enterprises; study of characteristics of successful entrepreneurs; development of project proposals; case studies of success/failure. Exercise on market survey – field visit to financial institutions. Simulated exercise to understand management processes. Field visit to extension organizations to understand the functions of management. Group exercise on development of short-term and long-term plan. Simulated exercise on techniques of decision-making. Designing organizational structure. Group activity on leadership development skills.

Besides, it is essential to understand the full process comprehensively in a sequential way.

Most of the syllabus is very academic. It is essential to equip teachers of research methodology to teach in a more practical way while equipping the students with field knowledge.

The scope of teaching project control techniques (PERT and CPM) should be elaborated by giving practical examples rather than merely discussing their differences and general characteristics.

Though the practical component of this course is well-outlined, these exercises are seldom accomplished. Mostly the practical ends with field visits to one or two successful entrepreneurs in a locality. Students should get the opportunity to develop model agriculture-based projects with thorough understanding on feasibility study, financial planning and cost-benefit analysis.

## EXT 507: HUMAN RESOURCE DEVELOPMENT (HRD) (2+1)

**Objective:** To orient students on importance of key concepts, their scope and conceptual framework, growth and development of human resources, subsystems of human resource development for extension organizations.

### Theory

#### UNIT I

Human resource development (HRD) – definition, meaning, importance, scope and need for HRD; conceptual framework, interdisciplinary approach, functional systems and case studies in HRD. HRD Interventions – different experiences; selection, development and growth; selection, recruitment, induction, staff training and development, career planning. Social and organizational culture: Indian perspective on cultural process and social structure, society in transition; organizational and managerial values and ethics, organizational commitment. Motivation and productivity – job description, analysis and evaluation; performance appraisal.

#### UNIT II

Human resource management: collective bargaining, negotiation skills. Human resource accounting (HRA): what is HRA? Why HRA? Information management for HRA and measurement in HRA. Intrapersonal processes: collective behaviour, learning, and perception; stress and coping mechanisms. Interpersonal processes: Helping process, communication and feedback and interpersonal styles. Group and Intergroup processes: group information and group processes. Organizational communication: team building process and functioning, conflict management, collaboration and competition, HRD and supervisors, task analysis; Capacity-building – counseling and mentoring. Role of a professional manager: task of professional manager, responsibility of professional manager; managerial skills and soft skills required for extension workers. Decision-making: decision-making models, management by objectives. Behavioural dynamics : leadership styles, group dynamics.

#### UNIT III

Training – meaning, determining training needs and development strategies; training types, models, methods and evaluation. Facilities for training – trainers' training; techniques for trainees' participation; research studies in training extension personnel. Main issues in HRD: HRD culture and climate; organizing for HRD; emerging trends and perspectives.

### Practical

Visits to different training organizations to review ongoing activities and facilities. Analysis of training methods followed by training institutions for farmers and extension workers. Studies on evaluation of training programmes. Study of HRD in organizations in terms of performance, organizational development, employee welfare and improving quality of work life and human resource information. Presentation of reports.

**General observations:** Too conceptual and very little applied content relevant to extension organizations.

Perhaps we need to look at the broader canvas of capacity development at different levels (individual, organizational and enabling environment levels).

Need to go beyond training as there are several other means of capacity development.

Need to look at undertaking capacity needs assessment (CNA) of stakeholders and extension organizations.

Different approaches to facilitate learning.

Advances in training evaluation and impact assessment with methodology.

Farmer organizational development.

Contents should go beyond the conceptual, definitional level and be tailor-made to suit the context of agricultural extension.

In the practical component, case studies may be included to discuss various issues like rural leadership development, organizational performance and quality of work life etc.

## EXT 508: VISUAL COMMUNICATION (2+1)

**Objective:** This course is intended to give a clear perspective on the importance of visuals and graphics in communication. The course starts with a delineation of the characteristics of visuals and graphics followed by its main functions, theories of visual perception and their classification and selection. Further, it deals with designing the message, graphic formats and devices and presentation of data. It makes the students understand, prepare and present scientific data effectively by using low-cost visuals. The course also exposes students to various digitized video material in multimedia and also enables them to design visuals for print, TV and gives them know-how about scanning of visuals.

### Theory

#### UNIT I

Role of visuals and graphics in communication. Characteristics of visuals and graphics. Functions of visuals and graphics. Theories of visual perception. Classification and selection of visuals.

#### UNIT II

Designing message for visual and graphic formats and devices. Presentation of scientific data. Principles and production of low-cost visuals.

#### UNIT III

Photographs: reprographic visuals; PC-based visuals. Digitized video material in multimedia production. Designing visuals for print and TV and video.

UNIT IV Pre-testing and evaluation of visuals. Scanning of visuals.

### Practical

Preparation of low cost projected and Non-Projected visuals. Designing and layout of charts, posters, flash cards etc. Power point presentations. Generating computer aided presentation graphics. Scanning and evaluation of visuals.

**General observations:** Relevance and content areas of this course may be reconsidered as many of the visual communication tools are outdated and are not presently in use.

Emphasis should be given to the new age communication media like various social media tools and guidelines for the proper use of it, which are cost effective and much more popular.

Many of the Massive Open Online Courses offered by popular platforms like Coursera, Edex etc. are relevant to this course. So the syllabus should have the scope for such blended learning approaches. The AESA blog, Massive opportunities for knowledge upscaling: The Unharnessed Potential of Massive Open Online Courses (MOOCs) by Vishnu (2018)<sup>62</sup> may give more insights in this direction.

<sup>62</sup> Vishnu (2018). Massive opportunities for knowledge upscaling: The Unharnessed Potential of Massive Open Online Courses (MOOCs). Blog. Agricultural Extension in South Asia. <http://www.aesa-gfras.net/admin/kcfinder/upload/files/AESA%20Blog%2082.pdf>

**EXT 509: PARTICIPATORY METHODS FOR TECHNOLOGY DEVELOPMENT AND TRANSFER (1+1)****Objective**

This course is intended to orient students to the key concepts and principles of participatory approaches to technology development and transfer and also to expose them to various participatory tools and techniques like space-related, time-related, relation-oriented methods. Besides, the students learn preparation of action plans participatory monitoring and evaluation.

**Theory**UNIT I

Participatory extension – importance, key features, principles and processes of participatory approaches. Different participatory approaches (RRA, PRA, PLA, AEA, PALM, PAR, PAME, ESRE, FPR) and successful models.

UNIT II

Participatory tools and techniques. Space-related methods: village map (social and resource), mobility services and opportunities map and transect. Time-related methods: timeline, trend analysis, seasonal diagram; daily activity schedule, dream map. Relation oriented methods: cause and effect diagram (problem tree), impact diagram, well-being ranking method, Venn diagram, matrix ranking, livelihood analysis.

UNIT III

Preparation of action plans, concept and action plan preparation; participatory technology development and dissemination; participatory planning and management; phases and steps in planning and implementation aspects; process monitoring, participatory evaluation.

**Practical**

Simulated exercises on space-related, time-related and relation-oriented methods; documentation of PTD and dissemination; preparation of action plans; participatory monitoring and evaluation of developmental programmes.

**General observations:** The course objective is clear and comprehensive.

However, the ways of using these techniques at the field level are not adequately covered.

There is need for more focus on qualitative research techniques, hands-on experience with varied participatory methods and tools.

Apart from basic conceptual understanding, the course should cover participatory monitoring, evaluation and impact assessment too.

## EXT 510: GENDER SENSITIZATION FOR DEVELOPMENT (1+1)

### Objective

In this course students get an overview of the concept of gender balance in relation to development. They are made aware of gender roles, rights, responsibilities and relationships in the context of development. Students also learn attitudinal change to internalize gender equity concerns as fundamental human rights and also enhance their capability for identifying and analyzing gender issues in agriculture and allied sectors.

### Theory

#### UNIT I

Gender concepts, issues and challenges in development; gender roles, gender balance, status, need and scope; gender analysis tools and techniques.

#### UNIT II

National policy for empowerment of women since Independence; developmental programmes for women; gender mainstreaming in agriculture and allied sectors – need and relevance; gender budgeting – a tool for empowering women.

#### UNIT III

Women empowerment – dimensions; women empowerment through the SHG approach; women entrepreneurship and its role in economic development; public-private partnership for economic empowerment of women; building rural institutions for women's empowerment; women's human rights; action plans for gender mainstreaming.

### Practical

Visits to rural institutions engaged in women empowerment; visits to women entrepreneurial units to study the ways and means of establishing entrepreneurship units for women and their development and also SWOT analysis of the unit; visit to Center for Women Development - NIRD to study the activities related to projects and research on gender; visit to gender cell, Office of the Commissioner and Director of Agriculture, Hyderabad, to study the mainstreaming of gender concerns and the gender budget of the department.

**General observations:** In addition to definitions and basic concepts, the course needs to impart broader understanding of gender in agriculture. We also recommend:

Use of a gender lens in varied contexts of rural livelihood

Engagement, opportunities and entry points for working with men and women

Case study-based approach in understanding the implications of gender in agriculture and reflecting the same through films.

Scope for doing the gender analysis of selected interventions/projects in addition to the content on basic concepts.

## EXT 511: PERSPECTIVES OF DISTANCE EDUCATION (1+1)

**Objective:** The course is intended to orient students to the concept of distance education, characteristics of distance education, evolution, methods of distance education, different approaches to planning distance education, educational technology in distance education, management of resources for distance education, strategies for maximizing reach and programme evaluation and quality assessment.

### **Theory**

#### UNIT I

Distance education – Introduction, meaning, concept, philosophy and work ethics. Characteristics of distance education – evolution and historical view of distance education, theory, methodology, and epistemology; dimensions of distance education, scope and difficulties. Open education – non-formal education, continuing education, education by correspondence.

#### UNIT II

Forms and systems of distance and open education, modes of teaching and learning in distance education, methods of distance education, significance of distance education in teacher education.

#### UNIT III

Planning distance education – a systems approach. Student learning – course planning, target groups. Barriers to learning in distance education – planning and management of networked learning.

#### UNIT IV

Educational technology in distance education. Application of information and educational technologies in distance education, development of course and course material. Management of resources, processes; forms of instructional material and media development and production; video classroom strategy; strategies for maximizing reach; services to students, programme evaluation, performance indicators and quality assessment.

### **Practical**

Visit to a university implementing distance education programmes. Detailed study of their programmes in relation to educational technology, methodology, curriculum development, evaluation and assessment. Exercise on development of curriculum for distance education exclusively for farming community.

**General observations:** Perhaps this course needs an overhaul as distance education has advanced much more than has been conceptualized in the syllabus.

The course should introduce massive open online course platforms which are greatly relevant to social science students such as Coursera, Edex, Udemy, AgMOOCS, etc.

The course should cover:

Enrolment and participation in certificate MOOC courses.

Introduction and use of various digital resources like online tutorials, reading resources and websites.

Creation and use of digital resources like mind maps, reusable learning objects (RLOs), etc.

Promotion and use of e-technologies like e-discussions, online surveys, etc.

## EXT 512: MARKET-LED EXTENSION MANAGEMENT (1+1)

**Objective:** Students learn the significance of postharvest management and value addition in the present market environment and the challenges and future strategies for market-led extension management. Also, the course identifies information sources for market intelligence and knowledge of marketing infrastructure, multilevel marketing and linkages for market-led extension. In addition, students learn about public-private partnerships for market-led extension management, features of contract farming, WTO and its implications on agriculture and Understanding the role of IT for market intelligence.

### Theory

#### UNIT I

Agricultural extension at the crossroads; changing scenario of agricultural extension at the national level. Market-led extension – emerging perspectives; issues and challenges. Dimensions of market-led extension.

#### UNIT II

Overview of agricultural marketing; development of a marketing plan, pricing concepts and pricing strategy; consumer behaviour; marketing communication and promotional strategies; marketing research process; agricultural trade liberalization and its impact; international marketing opportunities; implications of AOA, TRIPS and IPRs agreements on agriculture; agreement on SPS and TBT - an over view; commodity features marketing.

#### UNIT III

Public-private linkages in market-led extension; role of self-help groups; contract farming – a viable approach to meeting market challenges; IT-enabled approaches for market-led extension and communication; weather service and crop modeling – an effective tool in market-led extension.

### Practical

Identification and analysis of different marketing sources for agricultural commodities. Development of strategy for an effective market intelligence system; development of suitable marketing plan to suit rural situations; visit to APEDA, farmer bazaars to study processes and procedures related to market-led extension.

**General observations:** Enhanced understanding on the latest advances in topics related to WTO agreements, IPR and other relevant treaties should be part of suggested reading rather than taught in class.

There is a need to enhance students' understanding on

Market opportunity identification

Market analysis tools

Consumer preference studies

Use of ICT tools for value chain services

Analyze value chains and supply chains

Different marketing strategies and approaches by smallholder farmers

Market linkage methods

Actor system mapping of agricultural value chains

Nature and use of most important tool kits and approaches to value chain development

As we have seen in Table 4, the course content in general is the same in all universities. Also, it has not changed much from previous decades. This explains why postgraduates in extension are not qualified to apply for several jobs where the competency sought is different from what extension students offer.

For instance, several positions in CGIAR research centres and organizations like UN-FAO ask for qualifications or experience of using Agricultural Innovation Systems. Communication manager positions in both national and international NGOs working on agricultural and rural development are filled by those with a Master's in journalism or communication or science journalism. For jobs in monitoring and evaluation of agricultural/rural development programmes, competency is

demanding in monitoring and evaluation including indicator development, study design, data analysis and experience of using knowledge management software or databases. Positions such as livelihood manager, project manager and training specialists specify a Master of Social Work degree as the essential/desirable qualification.

Jobs for which MSc Agricultural Extension is an essential qualification are very few. These include scientific positions in ICAR, SMS in KVKs and assistant professors in SAUs and very few positions in select commodity boards. While the number of such positions is limited, they get filled very rarely. It is time that we do serious introspection on what the job market demands of postgraduates in extension.

## 6. Extension curricula at doctoral level

Before we review the current PhD level courses in agricultural extension, we need to clearly define the rationale or purpose behind offering a PhD programme in extension. A PhD programme in agricultural extension should prepare researchers in the discipline of extension and develop professionals who can manage extension organizations and take leadership in extension teaching in universities. Those having a PhD in agricultural extension should be able to respond to the current and emerging challenges in extension at the programme and policy levels.

But are we producing such personnel? Our assessment is that we are not producing professionals with sufficient research expertise or teaching competencies through the courses currently being offered at the PhD level. We could not locate any reviews on the PhD extension curricula in India; perhaps they did not receive much attention in the past. Most of the universities in India currently follow ICAR-recommended courses (Table 6) at the PhD level with minor variations.

The NAAS Brainstorming Session on Strengthening Agricultural Extension Research and Education

held on 9 July 2016 at New Delhi noted that “many courses in Extension discipline at Master’s or PhD level have overlapping content. Such courses may be merged and space may be created for new courses which promote/inculcate entrepreneurship, agri-business, develop soft and brokering skills, value chain extension capabilities among the students”<sup>64</sup>.

We reviewed the existing courses at the PhD level and our observations are given in Table 7. In many cases the courses are merely a repetition of the courses at the MSc level with the word ‘advanced’ added to the title.

Lack of sufficient exposure to advances in quantitative and qualitative research continue to be one of the major weaknesses in the curriculum at the PhD level. This has clearly impacted the quality of extension research in India. Based on a review of published articles in Indian extension journals, Sivakumar and Sulaiman (2015)<sup>65</sup> noted that “extension research in India is currently not providing either fresh insights for extension policy or any guidance on the practice of extension”. We are also not producing PhDs who can compete nationally or globally as social science researchers in agriculture or as designers or evaluators of agricultural/livelihood programmes for which there is great demand.

**Table 6. PhD courses prescribed by ICAR in agricultural extension**

Code	Course title	Credits
EXT 601**	Advances in agricultural extension	2+1
EXT 602**	Advanced design and techniques in social science research	2+1
EXT 603**	Advances in training technology	2+1
EXT 604**	Organizational development	2+1
EXT 605**	Advanced instructional technology	2+1
EXT 606	Theory construction in social sciences	2+0
EXT 607	Advanced management techniques	2+1
EXT 608	Media management	2+1
EXT 609	Transfer of technology in agriculture	2+1

\*\* indicates compulsory courses.

Source: ICAR (2009)<sup>63</sup>

<sup>63</sup> ICAR (2009). New and Restructured Post-Graduate Curricula & Syllabi on Social Sciences, Education Division, ICAR, New Delhi. <http://www.icar.org.in/files/edu/Revised-PG-Course-Curricula-and-Syllabi/Social%20Sciences%2030.4.2009.pdf>

<sup>64</sup> Mahesh Chander (2016). Brainstorming Session on Strengthening Agricultural Extension Research and Education, 9 July 2016, New Delhi organized by National Academy of Agricultural Sciences. Meeting Note. Agricultural Extension in South Asia. <http://www.aesa-gfras.net/admin/kcfinder/upload/files/Meeting%20Notes%2030.pdf>

<sup>65</sup> Sivakumar S.P., Sulaiman V. (2015). Extension Research in India Current Status and Future Strategies. Working Paper. Agricultural Extension in South Asia. <http://www.aesa-gfras.net/admin/kcfinder/upload/files/Final%20One%20WP2.pdf>

**Table 7. Analysis of PhD curricula on agricultural extension**

Title and content	Observations
<p><b>EXT 601: ADVANCES IN AGRICULTURAL EXTENSION (2+1)</b></p> <p><b>Objective</b>                      By the end of the course the student will be able to                      Critically analyze different agricultural extension approaches                      Understand Agricultural Knowledge Information System (AKIS) and Indigenous Technical Knowledge (ITK)                      Understand advances in extension - cyber extension, ICT-enabled extension services; market-led extension, public-private partnership, mainstreaming gender in extension organizational innovations.                      Visualize implications of WTO - AOA and develop extension strategies.                      Understand extension reforms and Farmer Field Schools, decentralized decision-making, bottom-up planning, ATMA, FSBE &amp; CIGs etc., ATIC, IVLP and Kisan Call Centres.</p> <p><b>Theory</b>  <u>UNIT I</u>                      Approaches of Agricultural Extension: A critical analysis of different approaches. Importance and relevance of indigenous knowledge systems, identification and documentation of ITK, integration of ITK systems in research formulation, concept of AKIS, training of stakeholders of AKIS.  <u>UNIT II</u>                      Cyber Extension: Concept of cyber extension; national and international cases of extension projects using ICT and their impact of agricultural extension. Alternative methods of financing agricultural extension: scope, limitations and experience and cases. Farmer -market linkage: importance, scope, implications etc, market -led extension, farmer-led extension, concept of Farm Field Schools. Public-private partnership: meaning, models, identification of various areas for partnership. Stakeholder analysis in extension. Mainstreaming gender in extension: issues and prospects.  <u>UNIT III</u>                      Implications of WTO: AOA for extension services; re-orientation of extension services for agri-business and marketing activities; GOI-NGO collaboration to improve efficiency of extension.  <u>UNIT IV</u>                      Extension and contemporary issues: extension issues related to rural poverty. Privatization of extension. Intellectual Property Rights (IPRs). Extension reforms in India -- decentralized decision-making, bottom-up planning, Farming System and Situation-based Extension Delivery System; extension delivery through commodity interest groups. Organization innovations in extension -- ATIC, IVLP, Kisan Call Centres.</p> <p><b>Practical</b>                      Analysis of ITK systems, case studies on integration of ITK and the formal research system; analysis of cases on cyber extension and privatization of extension; analysis of ATMA and SREP. Practising bottom-up planning. Visit to public-private-farmer partnership. Learnings from food and nutritional security and biodiversity projects and programmes.</p>	<p>A lot of the course content is repeated from the MSc level . For instance,</p> <ol style="list-style-type: none"> <li>1. Development perspectives of extension education (Ext-501)</li> <li>2. E-Extension (Ext-505)</li> <li>3. Market-led extension management (Ext-512)</li> <li>4. Gender sensitization for development (Ext 510)</li> </ol> <p><b>General observations:</b> Many of the topics mentioned here are not advances in extension.</p> <p>ICT, ITKs, AKIS, market-led extension, gender, ATMA, ATIC, IVLP, Kisan Call Centres are either already covered or should have been covered at the MSc level.</p> <p>WTO is neither new nor relevant here</p> <p>This course needs complete restructuring with the following topics:</p> <ul style="list-style-type: none"> <li>Changing context of extension</li> <li>Changing demands for support</li> <li>Opportunities offered through pluralistic extension and advisory service delivery</li> <li>Need for new capacities</li> <li>Financing extension</li> <li>Coordination of pluralistic extension delivery</li> <li>Extension as part of agricultural innovation systems</li> </ul> <p>Reforms in extension at the global level and lessons from these</p> <ul style="list-style-type: none"> <li>Privatization</li> <li>Decentralization</li> </ul> <p>Policy: Strengthening the extension-policy interface</p>

**EXT 602: ADVANCED DESIGNS AND TECHNIQUES IN SOCIAL SCIENCE RESEARCH (2+1)****Objective**

By the end of the course, students should be able to

Develop and standardize an attitude scale using different techniques of attitude scale construction

Develop the skills of using projected and semi-projected techniques, computer package analysis and PRO Tools in extension research

**Theory**UNIT I

Scaling technique – meaning, types, principles, steps and quality. Techniques of attitude scale construction – paired comparison, equal appearing intervals, successive Intervals, summated ratings, Scalogram analysis, scale discrimination technique, reliability and validity of scales. Sociometrics, content analysis, case studies, Q-sort techniques, semantic different technique.

UNIT II

Projective and semi-projective techniques, critical incident techniques, computer packages for analysis – usage in extension research. Knowledge scale measurement. Participatory tools and techniques in behaviour research – data collection and evaluation. Impact analysis, e-data collection and information analysis.

**Practical**

Practice in constructing a scale and use of scale in various situations. Reliability and validity of the scales developed, Application of semi-projective and projective techniques. Content analysis, case studies. Practising participatory tools and techniques. Hands-on experience on computer preparation and data collection instruments, review of previous studies.

**Repetition of content from PG courses:**

1. Research methods in behavioral sciences (Ext 504)
2. Participatory methods for technology development and transfer (Ext 509)

**General observations**

(Dr. Sethuraman Sivakumar, personal communication)

“The course looks outdated. Most of the reference books listed here are not appropriate. The scaling methods have progressed to a great extent at the international level with the developments in the Classical Test Theory.

Structural Equation Modeling based on the Summated Rating Scale is the widely used method in scale construction, which is missing here. Besides, Item Response Theory, a new generation test construction method, is missing here.

The contents of Unit 1 & 2 are vague, need elaboration.

We need to expand the participatory methods and impact analysis topics.

I am not sure how many extension teachers know the use of projective and semi-projective techniques and critical incident techniques. There are specific programmes organized by the psychology departments on projective techniques – how to use them in a systematic and proper way to understand the human personality.

Besides, this course is useful only when PhD students understand human psychology in a nuanced way. We need at least two courses on psychology – fundamentals and organizational psychology – where scale construction and projective techniques are extensively used. When our understanding of human behaviour is rudimentary, there is no fun in learning these advanced measurement techniques. This is the biggest problem in extension research as most of our published papers, especially in Indian journals, are not measuring what they are supposed to measure. This issue greatly hampers research quality”.

**EXT 603: ADVANCES IN TRAINING TECHNOLOGY (2+1)****Objective**

By the end of the course, students should be able to

- Plan and design a training programme
- Plan and develop effective training sessions
- Manage difficult situations while organizing training programmes
- Use different advanced participatory training methods

**Theory**UNIT I

Paradigm shift in training – learning scenario. Training approaches – experiential learning, laboratory - organization development (system) approaches. Training design, designing an effective training programme, harmonizing training needs; course objective, content and methods.

UNIT II

Designing an effective training session – the semantics involved; designing experiential training sessions; simulation exercises; and openness in training transactions; managing dilemmas, ambivalence and conflicts and confusion (for both trainers and trainees).

UNIT III

Recent training techniques for understanding and facilitation of team building, group dynamics, motivation and empowerment. Laboratory methods: micro-lab process work, and sensitivity training, psychological instruments as training tools: TAT, inventories, cases, etc.

UNIT IV

Participatory training techniques – lectures, brainstorming, group discussions and training games, role play, psycho-drama, coaching, counseling, etc. Trainer's roles and dilemmas; factors affecting training effectiveness and training evaluation.

**Practical**

Techniques of participatory training need assessment. Formulation of course objective, design of training programmes. Simulation exercises. Participatory training methods – role play and brainstorming, group discussions and counseling and conducting experiential learning sessions. Training evaluation – techniques of knowledge, skill and attitude evaluation. Visit to training institutions and study of training technologies.

**Repetition of content from PG courses:**

1. Human Resource Development (HRD)

**General observations:** Most of this course content is already covered under the current HRD course at the MSc level.

The focus of this course is too narrow at the training level; instead it should have been about capacity development of extension and advisory services.

**EXT 604: ORGANIZATIONAL DEVELOPMENT (2+1)****Objective**

By the end of the course student should be able to

Understand and study organizations in terms of types, characteristics, needs, motives, organization behaviour, organization communication, organization development and individual behaviour in an organization.

To analyze the factors affecting organizational effectiveness and distinguish between functional and nonfunctional organizations.

**Theory**UNIT I

Introduction to organizations: concept and characteristics of organizations, organizational behaviour – context and concept. Levels of organizations – formal and informal organizations. Theories of organizations; nature of organizational theory – classical theories, features of bureaucracy, administrative theory and scientific management, neoclassical theories, human relations movement, modern theory.

UNIT II

Systems approach to studying organization needs and motives – attitude, values and ethical behavior, alienation and work, work motivation. Communication and interpersonal behaviour – organization communication, leadership behavior, decision-making, problem-solving techniques, organizational climate, change-proneness and resistance to change, organizational change, organizational structure, process in organizing. Dimensions of motivation climate.

UNIT III

Departmentation – span of management, delegation of authority, centralization and decentralization, line and staff organization, functional organization, divisionalization. Project organization, matrix organization, free form organization, top management structure.

UNIT IV

Individual behaviour in organizations. Fundamentals of human relations and organizational behaviour, groups and teams, organisational culture and performance. Dynamics of organizational behavior, leadership conflict situations and inter group behavior. Organisational development, factors affecting organization effectiveness. Creativity, leadership, motivation and organization development.

**Practical**

Analysis of organization in terms of process – attitudes and values, motivation, leadership. Simulation exercises on problem-solving – study of organizational climate in different organizations. Study of organizational structure of development departments, study of departmentalization, span of control, delegation of authority, decision-making patterns, study of individual and group behaviour at work in an organization. Conflicts and their management in an organization. Comparative study of functional and nonfunctional organizations and drawing factors for organizational effectiveness.

**Repetition of content from PG courses:**

1. Human Resource Development (HRD) (Ext 507)
2. Entrepreneurship development and management in extension (Ext 506)

**General observations:** This is an important area but focus has to be on organizational learning and change.

There is a need to extensionize the whole content.

**EXT 605: ADVANCED INSTRUCTIONAL TECHNOLOGY (2+1)****Objective**

By the end of the course, student should be able to

Understand the agricultural education scenario in the country and the curriculum development process

Plan and prepare and present a course outline, lesson plan and skill plan

Develop appropriate teaching and learning styles

Use innovative instructional aids and methods

**Theory**UNIT I

Concepts in instructional technology, scope of instructional technology. History of agricultural education in India. Guidelines for curriculum development in agricultural universities. Curriculum design development.

UNIT II

Course outline, lesson plans for theory and practicals. Teaching and learning styles. Theories of learning. Cognitive levels. Instructional course objectives. Motivation of students.

UNIT III

Instructional methods. Experiential learning cycle. Innovative instructional aids. Computer-assisted instruction. Programmed instruction technique. Team teaching, e-learning, art of effective communication. Distance education. Student evaluation – question bank. Appraisal of teacher performance. Review of research in instructional technology.

**Practical**

Formulation of instructional course objectives. Development and presentation of course outlines. Preparation and presentation of lesson plans for theory and practicals with CAI design. Preparation of innovative low-cost instructional aids. Development of model question bank. Preparation of schedule for teacher evaluation. Visit to distance education centre. Study of research reviews and presentation of reports.

**Repetition of content from PG courses:**

1. Perspectives of distance education (Ext 511)
2. E-Extension (Ext 505)

**General observations:** The whole syllabus is outdated as the advanced technologies used today are much more and diverse.

Ideally, this course should include MOOCs as the main pedagogical approach.

**EXT 606: THEORY CONSTRUCTIONS IN SOCIAL SCIENCES (2+0)****Objective**

By the end of the course, students should be able to develop skills of theory building and scientific application of theoretical concepts in social sciences by applying appropriate statistical tests.

**Theory**UNIT I

Importance of theory construction in social science. Theory: meaning, elements, ideal criteria, functions, types. Definitions: meaning, types and rules. Generalizations: meaning, classification. Relationship: meaning types.

UNIT II

Terminology used in theory construction: Axiom, postulate, proposition, theorem, fact, concept, construct, probability and measurement basic derived. Steps in theory building – Axiomatic techniques, historical approaches. Scientific application. Theoretical concepts in social sciences. Test of theory: Applying appropriate statistical tests.

**Repetition of content from PG courses:**

1. Research methods in behavioral sciences (Ext 504)

**General observations**

(Dr. Sethuraman Sivakumar, personal communication)

The syllabus is very vague and lacks detail.

There is no demonstrated effort towards theory construction in extension science in India over the past three-four decades

Not sure that how many extension teachers understand theory construction research – which is highly specialized and difficult to conduct.

**EXT 607: ADVANCED MANAGEMENT TECHNIQUES (2+1)****Objective**

By the end of the course, students should be able to

Develop an understanding on the concept of MIS, its scope in agriculture extension organization.

Understand, develop and evaluate the MBO system

To cope with stress, resolve conflicts and develop effective interpersonal communication skills using transactional analysis.

Plan and use, DSS, AI, ES, PERT, CPM

**Theory**UNIT I

Management Information System (MIS): Basic concepts, types of information needed at various levels, design of MIS in an agricultural extension organization. Scope for computerization, system alternatives and evaluation. Implementation, operation and maintenance of the system.

UNIT II

Management by Course Objective (MBO): Elements of the MBO system. The process of MBO. Making MBO effective. Evaluation of the MBO system – strengths and weaknesses. Transactional Analysis (TA): Ego states, transactions, interpersonal relationships, strokes, stamps.

UNIT III

Managing organizational stress: sources of stress in an organization, effect of stress. Coping mechanisms and managing stress. Team-building process: Types of teams. Steps in teamwork, facilitators and barriers to effective relationships, nature of prejudice, tips in reducing interpersonal conflict, intergroup conflict, resolving techniques. conflict management.

UNIT IV

Decision support systems (DSSs): Basic information about Artificial Intelligence (AI) Expert Systems (ES), their future applications in an extension system. Forecasting techniques – time series analysis and Delphi, decision-making and talent management PERT, CPM techniques and time management.

**Practical**

Management Information System in research and development organizations. Study of Management by Course Objective in an organization. Transactional Analysis, exercises on team-building process, coping skills with organizational stress, exercises on Decision Support Systems (DSS). Practical exercise on forecasting techniques. Visit to management organizations.

Repetition of content from PG courses:

1. Entrepreneurship development and management in extension (Ext 506)

**General observations:** None of the techniques (CPM, PERT, MBO, Transaction Analysis, etc.) described here are advanced.

Many topics should be restructured and made relevant to extension. For example, the topic on MIS is only about its definition, concept, types, etc. How this is relevant to extension is not dealt with anywhere.

Also, topics like Expert Systems and DSS should be dealt with at the practical level rather than limiting them to definitions and differences.

There is a need to add and strengthen the content on Monitoring, Evaluation and Impact Assessment of Extension Programmes.

**EXT 608: MEDIA MANAGEMENT (2+1)****Objective**

To familiarize students with the working of print, electronic, new media and traditional folk media.

To develop working skills needed for print, radio and TV journalism to reach the farming community.

To develop in students an understanding of the mass communication process and media management its impact on society.

To develop writing skills for different media.

**Theory**UNIT I

Media management – introduction, definition, principles and significance of management. Media ownership patterns in India – proprietorship, partnership, private, public companies, trusts, cooperatives, religious institutions (societies) and franchisees (chains). Marketing functions – product, price, and placement and promotions.

UNIT II

Mass communication – meaning, concept, definition and theories of mass communication. Mass m history, functions, uses and theories of media. Journalism – meaning, definition, scope, functions and different types of journalism. Journalism as communication tool. Farm journalism – meaning and developments in farm journalism in India. Different problems with farm journalism. Print media – history, role of the press, news, types of news, electronics of news and sources of news, making of newspapers and magazines. Press codes, ethics and media Laws. News stories – principles of writing, structure of a news story, procedure of writing a news story and elements of style. Success stories and feature articles – types of feature articles. Information materials – types of information materials and users. Techniques in book publishing. Editing – principles, tools and techniques and art of proof reading. Measuring readability of writing.

UNIT III

Electronic media – role and importance of radio; history, role of radio in TOT; writing and presentation techniques. Different programmes in farm broadcasting, developing content for farm broadcast; role of FM radio in agriculture; ethics of broadcasting, broadcasting policy and code. Community radio – concept, meaning, role in TOT, cases of community radio. Television – history, role in TOT; Fundamentals of television production, techniques of script writing for TV; visual thinking, language and style; farm telecast programmes, cable and satellite TV and their impact. Ethics of telecasting, policy and code. Video production technology – potential and its utilization; typology of farm video production, types of video production and equipment used in production; procedure or technique of video production. Cassette technology – role in TOT, techniques of production of cassettes for the farming community. Traditional media – role of folk media in TOT and integration with electronic media.

UNIT IV

Advances in communication technology – Management of Agricultural Information System (MAIS). Use of computers in agriculture – application of IT in agriculture. Use of modern communication media – electronic video, teletext, teleconference, computer-assisted instruction, video conferencing. Features, advantages, limitations and risk factors involved in new media. Designing and development of communication and media strategy for developmental programmes. Online journalism scope and importance.

**Practical**

Exercise on writing for print media – writing news/success stories /feature articles. Editing and proof-reading of news for newspapers – different types of intros and leads. Exercise of writing for radio, TV, preparation of storyboard for farm video production. Script writing for Radio and TV. Visit to media organizations for studying the principles, procedures and processes in managing the media. Participation and Interaction through video conferences. Developing communication and media Strategy for selected developmental programmes /activities.

**Repetition of content from the PG courses:**

1. Visual communication (Ext 508)

2. Development communication and information management (Ext 502)

**General observations:** The contents of this section needs a thorough revamp as they are irrelevant to extension  
(Eg: Unit I).

**EXT 609: TRANSFER OF TECHNOLOGY IN AGRICULTURE (2+1)****Objective**

By the end of the course, students should be able to

Develop a thorough understanding of different systems of technology transfer

Develop appropriate communication and media strategy suitable to the system of technology transfer

Analyze the constraints in systems of technology transfer and suggest suitable strategies.

**Theory**UNIT I

Technology – meaning and concepts; appropriate technology, transfer of technology – meaning and concepts. Systems of transfer of technology – Knowledge Generating System (KGS), Knowledge Disseminating System (KDS), Knowledge Consuming System (KCS), Input Supplying Agencies System (ISAS).

UNIT II

Appropriateness of communication media in the system of technology transfer. New communication strategy for transfer and adoption of agricultural technology. Extension training in transfer of technology.

UNIT III

Constraints in transfer of technology, agencies or departments involved in TOT. Extension professionals in TOT. Attributes of technology and its relation in the TOT process. TOT to resource-poor farmers. Role of key communicators or local leaders in TOT. Private-public partnership in TOT.

**Practical**

Analysis of transferred technology. Analysis of knowledge generation and consuming systems. Formulation of communication strategies, Study of attributes of selected fast-spreading technologies and slow technologies. Study of constraints in TOT. Visit to TOT centres of ICAR and SAU. Identification of key communicators. Case studies of public-private partnerships. Visits to print and electronic media centres to study their role in TOT.

**Repetition of content from PG courses:**

Participatory methods for technology development and transfer

**General observations:** There is a need to broaden the orientation to the various systems perspectives in extension like AKIS, AIS.

## 7. Conclusions and the way forward

The agricultural extension curriculum currently followed at different levels in various institutions in India needs an overhaul. The current process employed in revising the extension curriculum needs to change. The committee of experts constituted once in a decade, which meets three or four times and only makes marginal changes to the existing curriculum, has not been able to make the needed changes to the curriculum. There is a lot of repetition of content at the UG, PG and PhD levels, and several topics are outdated. It is important to address these issues to create adequate space or credit hours for more relevant content. Apart from the quality of content, there is a need to address the issue of having an appropriate instructional methodology that leads to desired learning outcomes.

Curriculum revision is not easy. “Changing a given curriculum has implications for the contributions of departments, teams and teachers, and often goes against the regarding interests of the groups and individuals involved. Therefore, curriculum revision goes hand in hand with resistance against

change, and advocating current practices or at least defending the contribution of the given content-matter domains,” according to Mulder (2012)<sup>66</sup>.

Should curriculum review be left only to the discretion of faculty? We believe that such an exercise needs elaborate user consultations and identification of the core extension competencies needed at all levels (UG, PG, PhD). Perhaps we need to form small groups each working on how such core competencies can be developed through an appropriate curriculum and instructional methods beyond classroom lectures. The National Workshop on Agricultural Extension in India: Time to Change (14-16 February 2018) held at MANAGE, Hyderabad as part of the MANAGE-University Alliance for Advancing Agricultural Extension reiterated the need for pursuing extension curricular reforms along these lines.

For many of us who are passionate about extension this is the last opportunity to reform extension curricula. We believe history will not pardon us if we fail to respond.

We look forward to your valuable inputs.

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<sup>66</sup> Mulder M. (2012). Competence-based Education and Training, *Journal of Agricultural Education and Extension*, 18(3):305-314. <https://www.mmulder.nl/wp-content/uploads/2011/11/2012-Mulder-Competence-based-Education-and-Training-Editorial-JAEE-18-3.pdf>

## Annexure

### Extension Courses in Two Select Universities Abroad

We reviewed the extension curricula of two universities outside India to understand what and how they teach extension. These curricula included:

- a. UG and PG courses offered by the Department of Agricultural Extension, Faculty of Agriculture, University of Peradeniya, Sri Lanka
- b. MSc Development and Rural Innovation, Wageningen University, the Netherlands

At the University of Peradeniya, there is scope at the UG level to specialize in extension. At the PG level there are two streams offered at this university. At Wageningen University the focus is on communication and innovation studies. There is a lot we could learn from the experience of these two universities.

#### University of Peradeniya, Sri Lanka

As part of an eight-semester UG degree programme [BSc Agricultural Technology and Management (B.Sc. AgTech & Mgt)] by the Faculty of Agriculture, a Core Programme is jointly conducted by eight departments of study, and an Advanced Programme encompassing 12 advanced modules are offered by these eight departments, individually or jointly.

The Core Programme is compulsory for all the students, whereas a student has the freedom of selecting one of the 12 advanced modules in the Advanced Programme. The Core Programme comprises of 108 compulsory credit units including the project. Each advanced module comprises a series of compulsory courses, which offer a minimum of 12 credit units unique to that module, and a series of optional courses. The courses in the Core Programme are offered during Semesters I to V and VIII, with Semester VIII is devoted to the independent project. The courses in the Advanced Programme are offered during Semesters VI and VII. Semester VI is a transitional semester comprising courses from both Core and Advanced Programmes.

To be eligible for a degree, a student should have completed a minimum of 126 credit units during the four academic years of the degree programme (Table A).

102 credit units from the specified compulsory courses of the Core Programme.

- A minimum of 18 credit units from the specified compulsory and optional courses of the selected Advanced Module.
- 6 credit units from the project in a selected field of study.
- Every Advanced Module consists of a minimum total of 18 credit units, out of which at least 12 credit units are unique and compulsory of the given module.

**Table A. Courses at the UG level (Faculty of Agriculture, University of Peradeniya, Sri Lanka)**

Semester	Series	Course offered	No. of credits	
			Core	Advanced
1	1100	Courses of the Core Programme (compulsory)	16	
2	1200	Courses of the Core Programme (compulsory)	18	
3	2100	Courses of the Core Programme (compulsory)	19	
4	2200	Courses of the Core Programme (compulsory)	20	
5	3100	Courses of the Core Programme (compulsory)	21	
6	3200	Courses of the Core Programme (compulsory) Courses of the Advanced Modules (compulsory & optional)	8	} 18*
7	4100	Courses of the Advanced Modules (compulsory & optional)		
8	4200	Research project (compulsory)	6	
<b>Total credits</b>			<b>108</b>	<b>18</b>
<b>Total credits for the degree</b>			<b>126</b>	

\* Every advanced module consists of a minimum total of 18 total credit units, of which at least 12 credit units are unique and compulsory for the given module.

Students have to choose one of the eight advanced modules and those who are interested can take the advanced module offered by the Department of Agricultural Extension. The courses available under this advanced module are presented in Table B.

In addition to the above mentioned credited courses, a set of supplementary and complementary courses are offered to impart satisfactory proficiency in English, Sinhala, Tamil,

Mathematics, Physics, Information and Communication Technology and Laboratory Skills. It is mandatory for every student to pass the supplementary courses before semester VI, and the complementary courses before semester VIII to be eligible for the award of the degree.

At the postgraduate level, there are two streams of specialization, namely MSc Development Communication Extension and M.Sc. in Organizational Management (Table C and Table D).

**Table B. Advanced Module: Development Communication and Organizational Management**

Compulsory courses		Optional courses	
EX 3201	Extension Education (2:24/12/40)	EX 3203	Organizational Behaviour (2:24/12/34)
EX 3202	Communication: Theory & Practice (2:24/12/40)	EX 3204	Information Management (2:15/30/35)
EX 4101	Rural Sociology (2:24/12/34)	EB 3204	Marketing Management (2:20/20/34)
EX 4102	Human Resource Management (2:24/12/34)	EX 4106	Project Development & Management (2:20/20/34)
EX 4103	Productivity Enhancement Training (2:00/60/20)	EX 4107	Gender Issues in Development (2:20/20/34)
EX 4104	Journalism and Media Use (2:20/20/40)	EX 4108	Community Development Approaches (2:20/20/34)
EX 4105	Social Research Methods (2:24/12/44)	CS 4103	Statistical Methods II (2:30/00/15)
2: Number of credit units		EB 4106	Entrepreneurship (2:25/10/45)
24: Lecture hours			
12: Practical hours			
44: Independent learning hours			

**Table C. List of Courses offered by the M.Sc. Development Communication Extension programme**

Code	Title	Credits	Option
<b>First Semester</b>			
EX 5101	Principles of Communication	2	Compulsory/ Foundation
EX 5103	Adult Psychology	2	Compulsory
EX 5104	Developmental Sociology	2	Compulsory
EX 5106	Communication for Development	2	Compulsory
EX 5110	Developmental Extension and Education	2	Compulsory
EX 5198	Directed Study	2	Compulsory
EX 5199	Seminar	1	Compulsory
EX 5102	Principles of Organizational Management	2	Elective
EX 5105	Community Development	2	Elective
EX 5107	Organizational Theory and Behaviour	2	Elective
EX 5108	Human Resource Management	2	Elective
EX 5109	Information Retrieval	1	Elective
EX 5111	Gender and Development	2	Elective
EX 5112	Social Psychology	2	Elective
EC 5153	Resource Planning and Management	2	Elective
ST 5102	Basic Statistics	2	Prerequisite
<b>Second Semester</b>			
EX 5202	ICT for Development	2	Compulsory
EX 5210	Marketing Communication	2	Compulsory
EX 5199	Seminar	1	Compulsory
ST 6253	Statistical Methods for Behavioural Sciences	2	Compulsory
EX 5201	Developmental Journalism	2	Elective
EX 5203	Project Management	2	Elective
EX 5205	Human Resource Development	2	Elective
EX 5206	Participatory Methods for Development	2	Elective
EX 5207	Management Information Systems	2	Elective
EX 5208	Social Research Methodology	2	Elective
EC 5203	Development Economics	2	Elective

**Table D. List of courses offered by the M.Sc. Organisational Management programme**

Code	Title	Credits	Option
<b>First Semester</b>			
EX 5102	Principles of Organizational Management	2	Compulsory/Foundation
EX 5107	Organizational Theory and Behaviour	2	Compulsory
EX 5108	Human Resource Management	2	Compulsory
EX 5112	Social Psychology	2	Compulsory
EX 5196	Internship	2	Compulsory
EX 5199	Seminar	1	Compulsory
EX 5101	Principles of Communication	2	Elective
EX 5104	Developmental Sociology	2	Elective
EX 5105	Community Development	2	Elective
EX 5109	Information Retrieval	1	Elective
EX 5111	Gender and Development	2	Elective
EX 5113	Organizational Leadership	2	Elective
EX 5114	Corporate Relations	2	Elective
EC 5153	Resource Planning and Management	2	Elective
ST 5102	Basic Statistics	2	Prerequisite
<b>Second Semester</b>			
EX 5203	Project Management	2	Compulsory
EX 5205	Human Resource Development	2	Compulsory
EX 5209	Organizational Development and Change	2	Compulsory
ST 6253	Statistical Methods for Behavioural Sciences	2	Compulsory
EX 5199	Seminar	1	Compulsory
EX 5206	Participatory Methods for Development	2	Elective
EX 5207	Management Information Systems	2	Elective
EX 5208	Social Research Methodology	2	Elective
EX 5210	Marketing Communication	2	Elective
BM 5203	Marketing Management	3	Elective

**Wageningen University, Netherlands**

The university's MSc Development and Rural Innovation degree was once the postgraduate programme in Agricultural Extension. Wageningen University reinvented the subject as Communication and Innovation Studies. The programme details are given below.

**Study tracks**

Together with a study advisor, a student can choose one of the following study tracks.

- **Communication and Innovation Studies**, in which students study communication among stakeholders and disciplines in the context of societal problem-solving and change.
- **Technology and Development**, with the goal to understand how science and technology interact with international development problems such as food security, adaptation to climate change and social justice.
- **Sociology of Development and Change** focuses on the understanding of worldwide rural development problems from sociological and anthropological perspectives.

A synthesis of courses offered under this programme is presented in Table E.

**Table E: Synthesis of courses at Wageningen University, Netherlands**

No	Course title	Content	Learning outcomes	Activities
1	Introduction to the Sociology of Development, Knowledge and Change	<p>Key contemporary issues, viz. global environmental change, agro-industrialisation, rural-to-urban migration, economic globalization;</p> <p>Introduction to basic principles of sociological and anthropological enquiry;</p> <p>Recent critical challenges relating to power, discourse and environmental change</p> <p>Resource use, livelihoods, poverty and well-being and rights;</p> <p>Local-actor influence on development policies and interpretations</p>	<p>Understand and apply knowledge of sociological/ anthropological theories of development, theoretical concepts in relation to social and environmental change;</p> <p>Critically evaluate development policies from a social/ anthropological perspective;</p> <p>Understand the role of knowledge in rural innovation processes.</p>	<p>Interactive lectures;</p> <p>Student presentations;</p> <p>Essay writing;</p> <p>Discussion of knowledge and development issues;</p> <p>Reflecting on films</p>
2	Introduction to Communication and Innovation Studies	<p>Understanding of the role of communication in processes of individual and collective change;</p> <p>Advisory communication, persuasion, participatory innovation development and facilitation of societal learning and conflict management;</p> <p>Ethical aspects of professional communication, communication research and planning, and dynamics in innovation systems</p>	<p>Basic theoretical foundations of Communication and Innovation Studies;</p> <p>Be able to translate these insights to practical problem situations;</p> <p>Understanding of the potential and limitations of different types and forms of communicative intervention;</p> <p>Different types of research in the field of Communication and Innovation Studies;</p> <p>Be familiar with the international work-domain of Communication and Innovation Studies, including historical and policy developments therein.</p>	<p>Interactive lecturing;</p> <p>Discussion of literature in small groups;</p> <p>Joint reflection on student experiences/ video material.</p>

3	Introduction to Technology, Agro-ecology and Development	<p>Introduction to theories and methodologies that conceptualize the interaction between science, technology and society;</p> <p>Science and Technology that focus on agricultural and ecological processes;</p> <p>Differences between agrarian development in the North and the South, technology development for low external input farming systems; Power relations in Socio-Technical change, Biodiversity and participatory approaches in research and technology development</p>	<p>Understand major theories of science-society interaction and its consequences for technological development;</p> <p>Apply presented concepts and methods to new cases around particular themes and topics in the area of agroecology and development;</p> <p>Critically analyze academic articles dealing with sociotechnical change;</p> <p>Critically analyze the ways that social factors influence technological change, as well as the ways that technological change in turn influences social processes;</p> <p>Analyze social aspects of a technology in a real-life setting</p>	<p>Lectures, literature study;</p> <p>Group presentations and classroom discussions;</p> <p>Bicycle excursion on the first Thursday of the course</p>
4	Research Design & Research Methods	<p>Formulating a research objective and appropriate research questions;</p> <p>Various Research Designs and Research methods;</p> <p>Setting up of a research project following experiment, the cross-sectional design and the case study;</p> <p>Final goal of the course is that students learn to develop a research design for different types of research projects;</p> <p>Discussion of methods of random and non-random sampling (including case selection), methods of data collection (using questionnaires/interviews, observations and content analysis) and methods of quantitative as well as qualitative data analysis</p>	<p>Difference between a conceptual and a technical research design;</p> <p>Importance of formulating a research objective and a research issue;</p> <p>Experimental, cross-sectional and case-study research designs;</p> <p>Strategies for random and non-random sampling;</p> <p>Data collection by questionnaires/interviews, observation and content analysis;</p> <p>Basics of data analysis in quantitative and qualitative research.</p> <p>At the end of the course students are able to:</p> <p>Formulate an adequate research objective and an adequate set of research questions;</p> <p>Formulate a proper technical research design for an experimental study, a cross-sectional study and a case study;</p> <p>Make an operationalization for one-dimensional and multi-dimensional concepts.</p>	<p>Workshops in which both lecturing and interactive learning take place in small groups;</p> <p>Writing a research plan.</p>

5	Facilitating Interactive Processes	<p>Basic communication skills, and know the potential and limitation of different facilitation methodologies;</p> <p>Practicals aimed at experimentation and critical reflection on explored facilitation skills and methodologies</p>	<p>Apply basic communication techniques such as active listening, inquiry, dialogue, negotiation, creative exploration, non-violent communication and feedback;</p> <p>Understanding of the theories, principles, focus and value of different methodologies used to create multi-stakeholder learning, negotiation, mobilization and action;</p> <p>Make a preliminary assessment of a situation, critically select an appropriate Four quadrant perspective and related inquiry methodology, and make a plausible process design;</p> <p>Understand and recognize (intercultural) group dynamics, and multi-stakeholder learning and negotiation processes;</p> <p>Work in an (intercultural) team and purposely reflect upon and facilitate an ongoing interactive process.</p>	<p>Interactive lecturing, group work;</p> <p>Case studies, presentations and role plays;</p> <p>Experiential learning;</p> <p>Work in small groups to try and learn facilitation methodologies and skills</p>
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6	Cutting Edge Issues in Development and Rural Innovation	The course is tailor-made in the sense that it offers students the opportunity to deepen their knowledge of any of the themes covered in the previous courses or on any topic of their interest that has not yet been elaborated.	<p>Assess the state of knowledge of topical issues in sociotechnical change in a variety of complex contexts in general, and in the field of development and rural innovation in developing countries in particular, using information technology and collective primary data collection;</p> <p>Conduct an integrated analysis of a practical sociotechnical change situation in a limited time and space;</p> <p>Define and prioritize lines for further analytical action and solution design;</p> <p>Apply social science perspectives, theory and cognitive skills at an academic level to a practical situation;</p> <p>Interact professionally with a commissioner, and work in a demand-driven fashion without sacrificing a critical academic stance and ethical standards;</p> <p>Execute a complex project, arriving at an effective task division and group working procedures;</p> <p>Transform research findings into concrete and feasible practical recommendations;</p> <p>Implement reflexive learning by assessing their own performance and contribution to a professional team as well as an assessment of the contribution of other team members.</p>	<p>Student group work;</p> <p>Literature Retrieval; Student poster presentations or any other activity participants deem required to achieve their learning goals.</p> <p>A multiple day excursion is part of the activities, its preparation (content and methodology) is the assignment of one or more groups</p>
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7	Methodology for Field Research in the Social Sciences	<p>Social science field research methodology, in particular, a range of qualitative and quantitative methods;</p> <p>Opportunity to engage on a practical basis with research design, methods, techniques, data analysis, and reporting research;</p> <p>Problems of doing research in a situation outside one's own society;</p> <p>Implications of methodology and social theory for research;</p> <p>Definition and selection of appropriate units of analysis;</p> <p>Strengths and weaknesses of different methods for data collection;</p> <p>Choice of appropriate sample: selection of cases/ informants/ respondents and sampling within cases;</p> <p>Methods of recording data; Different procedures for data analysis and processing; Ethnographic writing;</p> <p>Presenting and reporting field research; Reflexivity and ethics of field research.</p>	<p>Demonstrate a basic understanding of epistemological and methodological key issues and assess positions in debates thereof;</p> <p>Assess the strengths and limitations of a range of (qualitative and quantitative) research methods and their complementarity in research contexts;</p> <p>Design research using the range of qualitative and quantitative methods and techniques introduced in the course;</p> <p>Systematically record, organize, code and analyze empirical field material;</p> <p>Reflexively assess the usage of different research field methods, techniques and procedures of analysis;</p> <p>Write a research report that builds on own findings</p>	<p>Lectures;</p> <p>Tutorials (8) and (group) Research Project;</p> <p>Practical on qualitative data-analysis and ethnographic writing;</p> <p>Individual feedback;</p> <p>Self-study literature</p>
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8	Thesis Path MDR	<p>Orientation with respect to (study and research) skills needed to the writing of their own social science research project (thesis);</p> <p>Literature search, retrieval and use, reading and writing, and the (philosophical) basis for interdisciplinary research;</p> <p>Successive stages of proposal writing: development of a research problem, development of an appropriate conceptual framework and its translation into researchable research questions, design of an adequate set of research techniques, as well as budgeting and scheduling of all the research activities.</p>	<p>Demonstrate proficiency in the following academic skills: writing, reading and information retrieval;</p> <p>Demonstrate a critical understanding of the differences between the philosophy of the natural and social sciences;</p> <p>Apply the steps necessary to arrive at an (MSc) research proposal:</p> <p>Identify a theme and zoom in to a researchable issue;</p> <p>Formulate a problem statement and research questions;</p> <p>Select a suitable theory. Construct a coherent two-page concept note for the MSc research project which reflects the relation between the (research) problem statement, the research questions, and a clearly formulated theoretical state-of-the-art in which the student positions him/herself in an academic debate;</p> <p>Identify his/her position in the disciplinary field(s);</p> <p>Apply effective presentations skills to comprehensively communicate research in progress;</p> <p>Constructively assess fellow students' presentations of research proposals and (preliminary) results;</p> <p>Critically reflect upon one's own knowledge generation and learning processes through a set of group evaluations.</p>	<p>Interactive lecturing;</p> <p>Group work;</p> <p>Literature study;</p> <p>Writing and public presentation of own (partial) research proposals and preliminary findings;</p> <p>Essay writing</p>
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9	Change, Inter-human Processes and Communication	<p>Worldwide social transformation processes, related to livelihoods, agro-food networks and the environment at the national and International levels;</p> <p>Role of storytelling and conversations for social change and transformation.</p>	<p>Understand relevant concepts and theories concerning complexity, inter-human processes and communication related to social change and innovation in both national and international contexts;</p> <p>Compose a conceptual framework, consisting of an integration of well-chosen concepts and theories for analyzing real-life experiences and practices related to change, inter-human processes and communication;</p> <p>Compose a scientifically sound paper in which a problem, event or phenomenon is analyzed from a dynamic communication perspective.</p>	<p>Meetings</p> <p>Discussion groups (theories and practices related to change processes)</p> <p>Guest lecturers reflecting on experiences in change management</p>
10	Political Ecologies of Natural Resource Distribution	<p>Governance of environmental risks, the greening of development, and biopolitics of resource conservation;</p> <p>Possible alternatives to the current neoliberal dominant order;</p> <p>Problematizing the sustainable livelihood paradigm and neoliberal governance schemes various political ecology perspectives;</p> <p>Use and distribution of natural resources, shape the livelihoods and socioecological environments of people - especially in the South;</p> <p>Issues of inequality and its relation to material struggles over access to and control over natural resources and socio-ecological environments;</p> <p>Globalization and political-economic processes in the neoliberal era, widening the public and private and changing role of the State</p>	<p>Analyze new conceptualizations of governance in relation to natural resources and socioecological change, especially from various political ecology perspectives;</p> <p>Critically reflect on the strengths and limitations of the sustainable livelihoods paradigm;</p> <p>Critically reflect on the literature, and defend their appraisal in workshops;</p> <p>Select and apply a theoretical and perspective for the study of resource distribution conflicts in writing a paper;</p> <p>Reflect on the potentialities of critical theory to propose radical and realistic alternatives to the current neoliberal global order.</p>	Weekly courses and workshops

11	Researching Socio-Technical Practices, Innovation and Responsible Futures	<p>Shaping the responsive innovation process both to the needs of social actors and the bio-material; How to research the relationship between sociotechnical practices, innovation processes and responsible futures; Technique of technography aimed at understanding the use of skills, tools, knowledge and techniques in everyday practices;</p> <p>Techniques aimed at engaging and understanding the views of publics and stakeholders to innovation processes and at contextualising these within dynamics of social and cultural change;</p> <p>Anticipatory methods aimed at cultivating collective imagination of the emergent features of (particularly disruptive) science and innovation</p>	<p>Understand core concepts and theories at the interface of the study of sociotechnical practices, innovation processes and responsible futures;</p> <p>Develop critical methodological skills through evaluation of three methodological approaches for such research;</p> <p>Connect methodological choices to the challenge of engaging society in innovation for development;</p> <p>Apply methodological and conceptual competences to plan what kind and how much evidence is needed to research and analyze a problem of their own choosing.</p>	<p>Lectures, literature research, interactive discussions, group presentations;</p> <p>Group work and writing an individual paper</p>
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