

Original Research Article

<https://doi.org/10.20546/ijcmas.2022.1107.007>

Educational Needs of Agricultural Graduates for Swift-Transfer of Agricultural Innovations

M. Shivamurthy¹, A. Madhushree^{2*}, P. Ranjith Kumar³ and Dishant Jojit James⁴

¹*Emeritus Scientist-ICAR, Department of Agricultural Extension, University of Agricultural Sciences, Bengaluru-65, India*

²*Emeritus Scientist project, Department of Agricultural Extension, University of Agricultural Sciences, Bangalore-65, India*

³*Zero Budget Natural Farming (ZBNF) Project, University of Agricultural Sciences, Bengaluru -65, India*

⁴*Agricultural Extension, Department of Agriculture, School of Agriculture and Biosciences, Karunya Institute of Technology and Sciences, Coimbatore, Tamil Nadu, India*

**Corresponding author*

ABSTRACT

Keywords

Educational needs, agricultural graduates, agricultural innovations, extension professionals

Article Info

Received:
05 June 2022
Accepted:
26 June 2022
Available Online:
10 July 2022

Present-day agriculture faces many challenges, such as low productivity, decreasing profitability, low scientific knowledge among farmers, high cost of inputs, non-availability of labour etc. To tackle these challenges, competent human resources in sufficiently large numbers are required in the near future. To achieve this, a renewed thrust for qualitative higher agriculture education is necessary. The present study has been conducted in Kolar, Tumkur and Chikkaballapur districts of Karnataka state to identify vivid knowledge and skills requirement for the agricultural graduates to perform effectively in private and government establishments for promotion of agricultural innovations. It was revealed that, the agricultural graduates should be trained more on innovative approaches of extension education for rapid transfer of agricultural technologies followed by conducting field trials and agri-business aspects. Large group of agricultural extension professionals expressed that, effective training should be given to the graduates on techniques to develop long-term extension program plans, techniques to establish management priorities and techniques of providing solutions to the problems. Therefore, agricultural extension courses need to be reoriented accordingly to address these issues.

Introduction

To meet the present-day challenges of agriculture, there are no specialized courses in educational technology to upgrade the teaching skills at the

agricultural education institutes and universities. In the Indian Council of Agricultural Research (ICAR) system of examination and evaluation, there is a disparity in assessing the quality of manpower generated. The agricultural graduates have to be

provided with education according to farmers' needs and interest (Pinaki *et al.*, 2019). For proper assessment of these, there is a need to identify dimensions of quality parameters of manpower so as to enable the ICAR and the agricultural education system to streamline and give direction to the State Agricultural Universities. One of the reasons given for the mixed employment success is the mismatch between what employers want and the traditional higher education curriculum used by most Agricultural universities (Rachel and Carley, 2018). The major cause for this mismatch would be due to the following reason: most of the agricultural universities have employed conventional techniques of teaching rather than adopting contemporary methods (Ismail *et al.*, 2017). Consistent and timely in-service educational needs of the agricultural professionals working at the field level will be of great use in refining curriculum of the agricultural degree program, (Catherine *et al.*, 2018). Therefore, the agricultural education system needs to be redefined so as to equip the present-day graduates with subject competency, self-motivation, positive attitude and agri-business skills. Support of the innovation process should focus on developing tools and should provide sufficient time for developing and implementation of innovation plans at a micro level as an important starting point for more macro-level changes that occur over longer time periods (Wilma, 2020).

Innovation capabilities depend not only on innovative individuals but also on internal features of an organization, especially incentives, cultures, organizational spaces for experimentation, coordinating structures and collective action. Innovation is widely regarded as pinnacle success factor in highly competitive and global economy. An innovation perspective draws a clear picture of future opportunities that lie ahead (Jayani and Yan, 2018). Agricultural innovation systems approach is essential to address the present-day challenges which are complex in nature with increased institutional pluralism in agricultural extension and advisory service delivery (Saravanan and Suchiradipita, 2017). It is necessary to build highly

skilled and confident manpower to deal with the present challenges of unsustainable land and water use practices, economic and ecological access to food among poor household and nutritional security and climate change challenges, with this backdrop, the present study has been carried out with the following specific objectives:

To identify knowledge and skills requirement of the agricultural graduates to perform effectively in private and government establishments for promotion of agricultural innovations.

To document the most preferred educational needs of agricultural graduates in promotion of agricultural innovations.

Materials and Methods

The present study has been conducted in Kolar, Tumkur and Chikkaballapur districts of Karnataka state. It was initiated by seeking the opinion survey from the agricultural extension professionals working in various agricultural related departments by using a pre-tested questionnaire with the set of questions identified by the agricultural extension experts. 150 Agricultural Extension professionals working in agricultural departments of Kolar, Chikkaballapur and Tumkur were selected as respondents for the study, by taking 50 extension professionals from each district. Borich's Educational and training needs assessment model (Roger, 2020 and Olorunfemi *et al.*, 2020) was used based on two dimensions of ability and importance and ranked based on five-point continuum Likert format (1= very low to very high in range=5).

For ranking and determining educational needs, weighted mean difference scores (WMDS) were calculated. Opinion survey was carried out from the agricultural extension professionals of different working levels in the Department of Agriculture to answer the research questions of the project; namely, Assistant Agriculture Officers (AAOs), Agriculture officers (AOs) and Assistant Director of Agriculture (ADA) of Kolar, Tumkur and

Chikkaballapur districts of Karnataka. The sample was based on purposive random sampling as shown in Table 1. Brief distribution of sample size across gender and age groups were considered while selecting the respondents.

Findings of the study

Perceived work load of agricultural professionals

The opinion of agricultural professionals on their work load was obtained on different parameters. The perceived work load of Agricultural professionals is presented in the Table 2. It is evident from Table 2 that majority of the extension professionals felt that they were busy/rushed in work as indicated by the score of 4.5 which falls within the range of 'agree'. In the same way, majority of agricultural extension experts agreed that number of requests, complaints/problems dealt with was more than expected, as seen from the score of 4.3. Extension professionals expressed that they were busy/rushed in work and number of requests, complaints/problems dealt with was more than expected. Similar findings were reported by Sofia *et al.*, (2021). So, it is very important that agricultural graduates must be aware of these issues and need time management and stress management courses in their course curriculum which would be of greater advantage for them to handle these issues.

Perception of agricultural extension professionals on organizational culture and working nature

Organizational culture and working nature are very much essential for the agricultural extension professionals to reach their full potential. Better understanding on this will have a greater scope to improve the working efficiency of the agricultural extension professionals. Therefore, under the changed situations much attention is required on working culture and nature of work at the agricultural development departments. The working nature has been analyzed with the statement provided in the Table3, by obtaining degree of

agreement or disagreement on five-point Likert scale. All the working professionals felt that, they were in acceptable organizational environment where the team of working professionals was mutually supportive. Also, the organization recognizes the good work of the employees and rewards for the same. The existing organizational structure and environment is good for efficient work. But it needs to be more flexible to increase the work efficiency. Similar findings were reported by Neeta *et al.*, (2020). So, it is required to modify the courses which can increase the positive attitude of the agricultural graduates and professionals.

Degree of satisfaction of agricultural extension professionals with respect to facilities and recognition

The degree of satisfaction as expressed by the professionals is an important factor for their efficient work and it is presented in the Table 4. Most of the professionals are satisfied with respect to job security as they were the permanent employees of the department. Apart from this, supervision and salary followed by others were the major parameters in which the agricultural extension professionals are satisfied. The results are in line with the findings of Kshatriya (2020).

Training needs as perceived by agricultural extension professionals for effective performance

Subject areas to be included in the curriculum at the college level of agricultural education are of greater significance for the agricultural extension professionals to perform efficiently at the field level. The response of agricultural extension professionals on list of possible areas where more intensive trainings are to be given at the college level are presented in Table 5. It is revealed that, the agricultural graduates should be trained more on innovative approaches of extension of the latest agricultural technologies followed by conducting field trials, more on agri-business aspects and others as listed in the table.

Table.1 Agricultural Extension professionals selected as respondents for the study

(n=150)

Sl. No.	Agricultural professionals Selected	Chikkaballapur district	Kolar district	Tumkur district
1	Assistant Director of Agriculture	05	06	05
2	Agriculture officer	10	10	10
3	Assistant Agriculture Officer	35	34	35
	Total	50	50	50

Table.2 Perceived work load of Agricultural professionals

(n=150)

S.N.	Statements	Mean Score
1	More busy or rushed	4.5
2	Number of official work activities are more and interfaced with how well it has to be done	3.9
3	Number of requests, complaints or problems dealt with was more than expected	4.3

Table.3 Perception of agricultural extension professionals on organizational culture and nature of working

(n=150)

S.N.	Statements	Mean Score
1	The organization recognizes and rewards good work of members rather than ignoring and criticizing	2.8
2	Things are well organized and goals are clearly defined	2.9
3	Friendliness, interpersonal trust and mutual support are prevalent in the organization	3.1
4	As needs for leadership arise, members feel free to take leadership roles and are rewarded for successful leadership	2.8

Table.4 Degree of satisfaction of agricultural extension professionals with respect to facilities and recognition

(n=150)

S. No.	Statements	Mean Score
1	Salary	3.6
2	Job security	4.5
3	Working conditions	3.1
4	Recognition	2.8
5	Opportunity for personal growth	2.0
6	Supervision	4.0

Table.5 Training needs as perceived by agricultural extension professionals for efficient performance (n=150)

S. No.	Areas of training needs on field extension work	Mean Score
1	The conduct of field trails	2.1
2	Control of major pests and diseases	1.8
3	Product skills and propagation techniques	1.8
4	Principles of crop production	1.6
5	Marketing system of agricultural products	2.0
6	Credits and Co-operatives	1.5
7	National prices for export commodities	2.2
8	Setting up agri-business	2.1
9	Public land and procedural laws, land act, land acquisition	2.0
10	Community developments	1.3
11	Organizing farmers' association	1.7
12	Proper handling of insecticides	2.0
13	Data analysis and report writing	2.0
14	Program planning	1.8
15	Field supervision of program	2.0
16	Innovative approaches in extension	2.2
17	Administration and supervision	1.7
18	Project implementation	1.8
19	Information gathering	1.7

Table.6 Training need of agricultural extension professionals for effective performing the tasks of field extension work.

		(n=150)
S. N.	Competency areas in extension education	Mean Score
1	Techniques to develop and use extension messages appropriate to audience needs, interests and capabilities	2.3
2	Techniques to develop and use extension messages appropriate to the communication channels	2.4
3	Techniques of conducting extension teaching methods:	
	a. Result demonstrations	2.5
	b. Method demonstrations	2.5
	c. Lecture	2.1
	d. Individual instruction	2.0
4	Techniques in conducting group techniques :	
	a. Brainstorming	2.6
	b. General discussion	1.6
	c. Panel discussion	1.7
	d. Role playing	1.5
	e. Group projects	1.5
5	Techniques to use training aides	
	a. Slides and educational movies	2.3
	b. YouTube and videos	2.1
6	Techniques to prepare messages for teaching aides	
	a. Slides, movies and You tube	2.3
	b. Scripts for audio, motion picture and video programs	2.2
7	Techniques to organize and use community resources	
	a. Field trips and tours	2.5
	b. Farmer organizations	2.3
	c. Demonstration farms	2.5
8	Techniques to prepare and use mass media	
	a. Radio/ Television	1.8
	b. Newspapers and magazines	1.8
	c. Circular letters	1.8
	d. Public speeches	1.8
	e. Farm visits	1.9
	f. Agricultural campaigns	1.6
9	Techniques to increase public speaking ability	2.3
10	Techniques to determine the social structure of a village or community	2.1
11	Techniques to identify the leadership pattern and community leader existing in a village or community	2.3

In spite of great demand and opportunities for agricultural graduates in banking and insurance sectors, retailing industry, multi-national companies, government departments and non-governmental organizations, the agricultural graduates are unable to decide their career options even after four years of university education (Rana *et al.*, 2018). Thus, new approach to higher education in agriculture is needed to address the issues and challenges facing agriculture sector in the 21st century.

Training need of agricultural extension professionals for effective performing the tasks of field extension work

Communication is playing a crucial role in extension of any technology from lab to land. It is pre-requisite for any agricultural extension expert to have a strong hold on communicating the new technologies to the farmers in effective manner. The communication can be made with different methods as indicated in the Table 6. It broadly classifies communication as techniques to develop and use extension messages appropriately to meet the audience needs, interests and capabilities, techniques to develop and use extension messages appropriate to the channels of communication. Regarding techniques to select appropriate teaching methods, most of the respondents felt that brainstorming and group technique (2.6 score) is most desired means to communicate agricultural technologies followed by field trips, educational tours, result demonstration, method demonstration with a score of 2.5. Identical report was also provided by Jessica and Erica (2018) who found that the most popular skills and abilities desired by employers were written communication skills, character skills, visual communications skills and oral communication skills.

Understanding of values and structure of the farmers and their families is another important aspect in which the extension professionals must have greater proficiency to perform effective extension work. Perception analysis of extension professionals on values and structure revealed that, they need training on techniques to identify the leadership pattern

existed in villages or community with a score of 2.3 followed by techniques to determine the social structure of a village or community and methods of recognizing community leaders and community members.

The agricultural graduates at the college level should be educated more on innovative approaches of extension of the agricultural technologies followed by conducting field trails and agri-business aspects. They have perceived that education technology is more effective through field trips, tours, result demonstration and method demonstration. Hence, these communication methods must be given more priority than the other. Large group of agricultural extension professionals expressed that effective training should be given on techniques to develop long-term extension program plans, techniques to establish programming priorities and techniques of finding solutions to the problems. Besides they prefer to have intensive training on techniques to identify the leadership pattern existing in a villages or community. Also, they need practical training on the techniques to determine social structure of a village or community. More importantly they have considered identifying community leaders is most important to upscale agricultural technologies. Hence, reorienting agricultural extension curriculum on these areas is the most important necessity in the present context so as to enhance the performance of the extension professionals.

References

- Catherine A., Dibenedetto, Victoria C., Willis and R. Kirby Barrick, 2018, Needs Assessments for School-based Agricultural Education Teachers: A Review of Literature. *J. Agricultural Education*, 59(4): 52-71.
- Ismail Ouraich, Jess Lowenberg-Deboer, Alseny Soumah and Diawo Diallo, 2017, Employment Prospects for Agricultural Graduates in Guinea Conakry. *J. Agril. Extension and Rural Dev.*, 9(1): 5-13.
- Jayani Rajapathirana, R. P. and Yan Hui, 2018, Relationship between innovation capability,

- innovation type, and firm performance. *J. Innovation and Knowledge*, 3: 44–55.
- Jessica Corder and Erica Irlbeck, 2018, Agricultural Communications Skills, Abilities and Knowledge Desired By Employers Compared To Current Curriculum: A Literary Review. *J. Agricultural Education*, 59(4), 177-193.
- Kshatriya Amita Madhavrao, 2020, Job perception, job performance, job satisfaction and job stress of extension personnel working in state agriculture department of Marathwada region. *Ph.D. Thesis (Unpub.)*, Vasanttrao Naik Marathwada Krishi Vidyapeeth, Parbhani.
- Neeta Sabar, Ajay Prusty, Dwity Rout and Sandeep Rout, 2020, Job Satisfaction of Agriculture Extension Professionals in India- A Review. Conference proceedings: Emerging Innovation and Advancement in Biological Science, Human Welfare and Agriculture Research in Current Era, Kalp Lab, Mathura.
- Olorunfemi, T. O., Olorunfemi O. D. And Oladele, O. I., 2020, Borich needs model analysis of extension agents' competence on climate smart agricultural initiatives in South West Nigeria. *The Journal of Agricultural Education and Extension*, 26(1): 59-73.
- Pinaki Roy, Rajarshi Roy Burman, Amit Goswami, Reshma Gills, Sharma, J., Anshu Rani And Subhashreesahu, 2019, Educational needs for entrepreneurship promotion and barriers for agripreneurship development among agricultural graduates. *J. Community Mobilization and Sustainability Development*, 14(1): 155-159.
- Rachel Hendrix and Carley C. Morrison, 2018, Student Perceptions of Workforce Readiness in Agriculture. *J. Agricultural Education*, 59(3):213-228.
- Rana N., M. K. Agnihotri, M. B. Chetti and N. S. Rathore, 2018, Career Opportunities in Agriculture. *Indian Farming*, 68(06): 41–8.
- Rogerhanagriff, 2020, Applying a Needs Assessment Model for Improving Agricultural Education in Guinea. *J. Int. Agricultural and Extension Education*, 27(4): 79-94.
- Saravanan, R. and Suchiradipta, B., 2017, Agricultural Innovation Systems: Fostering Convergence for Extension. *MANAGE Bulletin 2*, National Institute of Agricultural Extension Management, Hyderabad, India.
- Sofia Wilhelmsson, Maria Andersson, Inger Arvidsson, Camilla Dahlqvist, Paul H. Hemsworth, Jenny Yngvesson and Jan Hultgren, 2021, Physical workload and psychosocial working conditions in Swedish pig transport drivers. *International Journal of Industrial Ergonomics*, 83:1-9.
- Wilma Van Staden, 2020, Climate Responsive Innovation within the Agricultural Curriculum and Learning System. *Southern African Journal of Environmental Education*, 36(2): 73-89.

How to cite this article:

Shivamurthy, M., A. Madhushree, P. Ranjith Kumar and Dishant Jojit James. 2022. Educational Needs of Agricultural Graduates for Swift-Transfer of Agricultural Innovations. *Int.J.Curr.Microbiol.App.Sci*. 11(07): 60-67. doi: <https://doi.org/10.20546/ijcmas.2022.1107.007>