Designing Training Module for Training of Extension Personnel in the Use of ICTs for Agricultural Extension

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Abstract

Information and communication technologies have aided agricultural extension in overcoming the unending challenges of limited availability of technical manpower and resources, delayed feedback mechanism, empowering small and marginal farmers, achieving gender equity and transfer of technology in line with the principle of sustainability. The benefits emanating from use of ICTs in agriculture can be doubled, owing to the fact that the ICT-use competencies of the extension professionals can be worked upon. The present study is an attempt to outline the crucial aspects of training programme for extension personnel. Two hundred ninety one extension personnel and 30 extension supervisors serving in the public extension system of Uttarakhand state were selected as respondents of the study by proportionate stratified random sampling method. A total of 15 aspects were considered for seeking opinion from both extension personnel and supervisors for designing the training module. These aspects were related to the suitable training organization, duration, resource persons, venue, time, potential participants, number of participants, fees, other arrangements, theory-practical ratio, approach, methods, supporting material, follow-up activities and summative as well as formative evaluation techniques. Appropriate training interventions, especially ICT-based training modules can be developed on the basis of the findings of the study, for honing the skill sets of the extension professionals of present age.

Keywords : Training, Information and communication technologies,
Extension system, Competency analysis

INFORMATION and Communication Technologies (ICTs) have fostered the pace of growth and development in knowledge and information driven economies of the present century. Agriculture sector and its extension system have also been radically transformed by the introduction of ICTs. FAO (2004) and NSSO (2014) have also advocated that in India, ICTs are becoming an important for reaching farming communities; ensuring food security and sustainable development of agriculture. ICTs have strengthened the existing research-extension-farmer-input-linkage system thereby enabling dissemination of useful and relevant information to the farming community overcoming temporal and spatial constraints. ICT-based extension has added diversity, knowledge-intensiveness and client orientation to the conventional system, making it more attuned to meet the information needs of farmers. With this, the farming communities are now exposed to modern ways of exchange, processing, management, transfer and utilization of information related to market linkages, technical information, availability of credit, business enterprise planning and other critical inputs.

In order to reap the benefits of ICT-driven extension advisory, agricultural extension system needs to have competent human resource base. ICTs can serve as a resource for the extension functionaries only when they have requisite capacities and competencies to operate and utilize the available technologies with contextual variations. To enable the farmers reap the benefits of latest information and technologies, extensional personnel need to be proficient and competent in all essential skill sets (Rohit and Beevi, 2017). The competency to use technology in design,

development, delivery and evaluation of extension programmes by the extension professionals is the need of the hour to make ICT-based extension more effective and efficient (Hamernik and Crosby, 2015). Considering this, it becomes utmost important to note that public extension system face severe challenges in terms of lack of motivation, competence, performance and accountability amongst its extension staff (Anderson, 2007 and Ferroni & Zhou, 2012) apart from being untrained, unskilled and inexperienced (Pandey *et al.,* 2016).

Therefore, immediate attention is needed to take actions for working upon the existing competencies of the extension professionals. Providing training opportunities focusing on areas related to competency and ensuring the participation of the functionaries as well can help in developing the required level of competency (Mitchell, 2002 and Cyr, 2008). Considering the potential of Agriculture in Uttarakhand state, the capacity building of human resources in use of ICTs for Agricultural Extension is of paramount importance. Accordingly, the need for incorporating revised curriculum for training is emerging with changing extension approaches and practices (Rohit and Beevi, 2017). Therefore, the present study makes an attempt to seek opinion of the extension professionals both at the grassroot and supervisory level on the major aspects of developing and designing training programme, with special reference to the 'Use of ICT's for Agricultural Extension'. The present investigation therefore was undertaken with the following objectives:

1. To study the socio-personal characteristics of the extension personnel and extension supervisors of Public Extension System of Uttarakhand State and

2. To seek the opinion of the extension personnel and extension supervisors on various aspects of training programme

METHODOLOGY

Universe of the Study : The Public Extension System of the Uttarakhand state which forms the universe of the study includes all line departments of the State, ICAR institutes and Krishi Vigyan Kendras.

Sampling Method and Selection of Respondents : The data for the present investigation was collected from 291 extension personnel and 30 extension supervisors working in the Public Extension System of the state using proportionate stratified random sampling method.

Research Design : The research design for the present study was analytical research design.

Tool and Techniques of Data Collection : Pre-tested structured questionnaire and Interview technique was used for the collection of data for the present investigation.

RESULTS AND DISCUSSION

Socio-Personal Characteristics of the Extension Personnel and Extension Supervisors of Public Extension System of Uttarakhand State

Years of Work Experience : In case of Extension Personnel, it can be seen from Table 1 that maximum number of respondents had low working experience *i.e.*, up to 10 years (62.89%), followed by medium *i.e.*, 11 to 21 years (35.39%) and remaining 1.72 per cent had high working experience *i.e.*, more than 21 years. The reason for this can be understood in terms of the promotional policies followed by government organizations and departments. Therefore, most of the extension field staff had working experience till 10 years. Similar findings have been documented by Hashemi *et al.* (2014), Pramila *et al.* (2014) and Raksha *et al.* (2014). Whereas, in case of the extension supervisors, maximum number of supervisors had medium work experience of 11 to 21 years (43.33%), followed by high work experience *i.e.,* more than 21 years (36.67%) and remaining 20 per cent had low work experience of up to 10 years (Table 1). Rajput *et al.* (2011) and Mishra (2010) also found that majority of the extension trainers had medium level of work experience.

Area of Specialization : The area of specialization of extension personnel has been depicted in Table 1 and shows that maximum number of the extension

TABLE 1

Distribution of respondents on the basis of socio-personal characteristics

Category	Extension Personnel (N=291)	Extension Supervisors (N=30)
Years of working experience		
Low (Up to 10 years)	183 (62.89)	06 (20.00)
Medium (11 to 21 years)	103 (35.39)	13 (43.33)
High (More than 21 years)	05 (1.72)	11 (36.67)
Area of Specialization		
Agricultural Sciences	139 (47.77)	13 (43.33)
Horticultural Sciences	60 (20.62)	08 (26.67)
Veterinary Sciences and	58 (19.93)	04 (13.33)
Animal Husbandry		
Fisheries Sciences	29 (9.96)	05 (16.67)
Social Sciences	05 (1.72)	00 (00.00)
Educational Qualification		
Graduation	91 (31.27)	16 (53.33)
Post-Graduation	131 (45.02)	07 (23.33)
Ph.D.	69 (23.71)	07 (23.33)
Post-Doctorate	00 (00.00)	00 (00.00)

Figures in parenthesis denotes the percentages

personnel had specialized in Agricultural Sciences (47.77%), followed by Horticultural Sciences (20.62%), Veterinary Sciences and Animal Husbandry (19.39%), Fisheries Sciences (9.96%) and remaining 1.27 per cent in Social Sciences. Similarly, in case of surveyed extension supervisors also, maximum number of supervisors specialized in the field of Agricultural Sciences (43.33%), followed by Horticultural Sciences (26.67%), Fisheries Sciences (16.67%) and Veterinary Sciences & Animal Husbandry (13.33%). None of the supervisors interviewed had Social Sciences as their area of specialization (Table 1).

Educational Qualification : Perusal of Table 1 clearly revealed that maximum number of extension personnel (45.02%) had studied up to post-graduation, followed by graduation (31.27%) and Ph.D. (23.71%). It was found that 53.33 per cent of extension supervisors were graduates, followed by

23.33 per cent each who had obtained Post-graduate and Ph.D. degrees (Table 1). None of the sampled extension personnel and extension supervisors had attained a post-doctorate degree.

Opinion of the Extension Personnel and Extension Supervisors on Various Aspects of Training Programme on 'Use of ICTs for Agricultural Extension'

The present investigation serves to seek the opinion of the extension functionaries both at the grassroot and the supervisory level for designing the training module on 'Use of ICTs for Agricultural Extension'. A total of 15 crucial aspects for designing training programme were choosen on the basis of available literature and with consultation of the experts for seeking the responses of extension personnel and extension supervisors. The aspects, on which opinion was sought from the respondents were related to training organization, duration, resource persons, venue, time, potential participants, number of trainees, fees, other arrangements, theory-practical ratio, approach, methods, supporting material, follow-up activities and evaluation. All these 15 aspects can serve the basis for designing of the training interventions for the extension personnel and are as follows :

Training organization : A perusal of Table 2 shows that half (50.17%) of the extension personnel felt training should be conducted by other institution having expertise in ICTs, whereas remaining 49.83 per cent opted for their own institution/ department. None of the respondents felt that the training should

TABLE 2

Training organization

Category	Extension Personnel (N=291)	Extension Supervisors (N=30)
Own Institution/ Department	145 (49.83)	11 (36.67)
IT company	0 (00.00)	0 (00.00)
Other Institution with expertise in ICTs	146 (50.17)	19 (63.33)

Figures in parenthesis denotes the percentages

be conducted by an IT company. Majority of the supervisors also felt that institutions having expertise in ICTs (63.33%), followed by parent institution / department (36.67%) should organize the training programme on ICTs for agricultural extension (Table 2).

Training Duration : It is clearly evident from Table 3 that maximum number of extension personnel (44.33%) felt that two weeks period was appropriate duration for the training, followed by one week (35.39%), three weeks (17.53%) and one month (2.75%). However, in case of extension supervisors, 93.33 per cent felt that one week was appropriate period for the training programme and remaining 6.67 per cent stated that two weeks period was appropriate for the trainings. None of the extension supervisors felt that more than two weeks period was needed for ICT training. The duration of trainings on ICTs and related themes varied from four days to more than a month (Anonymous, 2006; Mishra, 2008; Ali *et al.*, 2013; Senadheera *et al.*, 2013; Anonymous, 2015 and Kumar *et al.*, 2018).

TABLE 3

Duration of the training programme

Category	Extension Personnel (N=291)		Extension Supervisors (N=30)	
One week	103	(35.39)	28	(93.33)
Two weeks	129	(44.33)	2	(6.67)
Three weeks	51	(17.53)	0	(00.00)
One month	8	(2.75)	0	(00.00)

Figures in parenthesis denotes the percentages

Resource Persons : Perusal of Table 4 revealed that majority of the extension personnel (81.10%) stated that a mix of experts from both parent organization and training institution was ideal choice for resource persons of the training programme. This was followed by 43.99 per cent who felt that experts who have worked in the area of ICTs for Agriculture but not necessarily computer experts were suitable as resource person followed by outside IT trainers (25.43%),

TABLE 4

Resource persons for training programme

Category	Extension Personnel (N=291)		Extension Supervisors (N=30)	
Experts from your organization	16	(5.50)	0	(00.00)
Experts from the training institution	14	(4.81)	2	(6.67)
Experts from both your organi--zation and training institution	236	(81.10)	17	(56.67)
Colleagues who have already been trained	66	(22.68)	0	(00.00)
Outside IT trainers	74	(25.43)	11	(36.67)
People who have worked in ICTs for Agriculture (may not be computer experts)	128	(43.99)	20	(66.67)

(*) multiple response; Figures in parenthesis denotes the percentages

colleagues who have already received training (22.68%), expert from one's own organization (5.50%) and experts from the training institution (4.81%). The responses regarding choice of resource person for the training programme varied widely in case of extension supervisors. Majority of the supervisors (66.67%) stated that resource persons should be people who may not be computer experts but have worked in field of ICTs for Agriculture, followed by experts from both one's own organization and training institution (56.67%), outside IT trainers (36.67%) and experts from the training institution (6.67%). Experts from one's own organization and colleagues who had received training earlier were not preferred in the role of resource person for the training programme by the supervisors. Mishra (2008) stated that majority of the extension trainers preferred use of professional experts as resource person in the trainings. Kumar *et al.* (2018) reported that a mix of trainers from the parent organization and outside the state were preferred choice as trainees.

Venue : The data on preference of training venue of the extension personnel and extension supervisors

have been stated in Table 5. More than half of the extension personnel (59.45%) felt that the ideal venue was the training institution, followed by their own institution (29.21%) and the neutral / third venue (11.34%). In case of extension supervisors, it was found that slightly more than half of the supervisors (56.67%) felt that neutral/ third venue was ideal for conducting training, followed by training institution (33.33%) and remaining 10 per cent were in favour of parent institution as the ideal training venue. The findings are different from that reported by Kumar *et al.* (2018).

TABLE 5

Venue for the training programme

Category	Extension Personnel (N=291)	Extension Supervisors (N=30)
Parent institution	85 (29.21)	3 (10.00)
Training institution	173 (59.45)	10 (33.33)
Neutral/ third venue	33 (11.34)	17 (56.67)

Figures in parenthesis denotes the percentages

An attempt was also made to find out the preferred time of the day for training. The responses on preferred time of the day for training were taken from only those extension personnel who felt that parent institution should be the training venue (29.21%). It was found that a large majority of these extension personnel (91.76%) preferred pre-lunch period and remaining 8.23 per cent preferred full day for ICT training (Table 6).

TABLE 6

Preferred time of the day for the training, in case of ideal venue is own institution

Category	Frequency (N=85)	Percentage
Pre lunch	78	91.76
Post lunch	0	00.00
Full day	7	8.23
After the scheduled office hours	0	00.00
Weekends	0	00.00
Total	85	100

Figures in parenthesis denotes the percentages

Preferred Time of the Year : Perusal of Table 7 shows that half of the extension personnel (50.86%) preferred to attend training during the period January to March, followed by no preference (25.43%), October to December (10.99%), July to September (10.31%) and April to June (2.40%). The findings are different from that of the study by Ali *et al.* (2013) and Kumar *et al.* (2018) in which it was stated that majority of the extension personnel preferred to attend the training programmes during the period October to December. Majority of the supervisors (60%) stated that October to December was the most suitable time for organizing training programme for extension personnel, followed by 33.33 per cent who were in favour of period between January to March and remaining 6.67 per cent had no preference (Table 7).

TABLE 7

Preferred time of the year for training

Category	Extension Personnel (N=291)	Extension Supervisors (N=30)
No preference	74 (25.43)	2 (6.67)
January-March	148 (50.86)	10 (33.33)
April-June	7 (2.40)	0 (00.00)
July-September	30 (10.31)	0 (00.00)
October-December	32 (10.99)	18 (60.00)

Figures in parenthesis denotes the percentages

Participants of Training : From Table 8 it can be concluded that more than half of the extension personnel (57.39%) felt that Assistant Agriculture Officer / Veterinary Officer II / SMSs / Fisheries Inspector / Supervisor should attend the training programme on ICTs, followed by Block Supervisors / Veterinary Officer I / Senior Fisheries Inspector / Principle Scientist (20.62%), newly recruited employees (14.43%) and Director/ Joint Director / Additional Director / Senior Scientist and Head (7.56%). None of the respondents felt that Computer Incharge / Lab technician / Programme Assistant should attend the training programme.

TABLE 8

Preferred trainees of training programme

Category	Frequency	Percentage
Director/ Joint Director/ Additional Director/ Senior Scientist and Head	22	7.56
Block supervisors/ Veterinary Additional Director/ Senior Scientist and Head	60	20.62
Assistant Agriculture Officer/ Veterinary Officer II/ SMSs/ Fisheries Inspector/ Supervisor	167	57.39
Computer incharge/ Lab technician/ Programme Assistant	0	00.00
Newly recruited employees	42	14.43

Number of Trainees : Maximum number of extension personnel (45.36%) stated that the number of trainees of the training programme should range between 10 to 20, followed by 21 to 30 (37.46%) and 31 to 40 (17.18%). None of the respondents felt that the number of trainees should be more than 40 (Table 9). On the other hand, maximum number of supervisors felt that the number of trainees should range between 21 to 30 (46.67%), followed by 10 to 20 (43.33%) and very few supervisors felt that 31 to 40 (6.67%) or 41 to 50 (3.33%) would be the right strength. None of the supervisors felt that the number of trainees should exceed 50. Available literature on training modules suggests that the number of participants in training programme must

TABLE 9

Number of trainees in training programme

Category	Extension Personnel (N=291)	Extension Supervisors (N=30)
10 to 20	132 (45.36)	13 (43.33)
21 to 30	109 (37.46)	14 (46.67)
31 to 40	50 (17.18)	02 (6.67)
41 to 50	00 (00.00)	01 (3.33)
Above 50	00 (00.00)	00 (00.00)

Figures in parenthesis denotes the percentages

be kept between 15 to 20 (Anonymous, 2006; Ali *et al.*, 2013 and Senadheera *et al.*, 2013).

Training Fees : Majority of the extension personnel (65.98%) mentioned that no fee should be charged for ICT training programme, followed by 20.27 per cent who felt that fee should range between Rs.3,001/- to Rs.6,000/- and remaining 13.75 per cent felt that fee should be below Rs.3,000/-. None of the extension personnel felt that the fee should be above Rs.6,000/- (Table 10). It was also found that majority of the supervisors (60%) felt that there should be no training fee for the training programme, followed 30 per cent who felt that fee should be between Rs.3,000/- to Rs.6,000/- and remaining 10 per cent stated that the fee should be between Rs.9,001/- to Rs.12,000/-. Training fee of more than Rs.12,000/- was not preferred by the supervisors.

TABLE 10

Fees for the training programme

Category	Extension Personnel (N=291)	Extension Supervisors (N=30)
No fee/ free of cost	192 (65.98)	18 (60.00)
Below Rs. 3,000/-	40 (13.75)	00 (00.00)
Rs. 3,001/- to Rs. 6,000/-	59 (20.27)	09 (30.00)
Rs. 6,001/- to Rs. 9,000/-	00 (00.00)	00 (00.00)
Rs. 9,001/- to 12,000/-	00 (00.00)	03 (10.00)
Rs. 12,001/- to Rs. 15,000/-	00 (00.00)	00 (00.00)
More than Rs. 15,001/-	00 (00.00)	00 (00.00)

Figures in parenthesis denotes the percentages

Other Training Arrangements : Perusal of Table 11 shows that majority of the extension personnel felt that lodging (91.75%), boarding (86.25%), both lodging and boarding (91.06%), only working lunch (54.98%) should be arranged by the training organization. On the other hand, majority of the respondents felt that reimbursement of travel expenses would be desirable (64.26%). Further, maximum number of respondents also felt that arrangement of local travel (50.17%) and trips to nearby tourist places (49.83%) would be desirable.

TABLE 11

Other arrangements to be made by the organizers for the training

Arrangement	Absolutely needed	Desirable	Not at all needed
Lodging	267 (91.75)	24 (8.25)	00
Boarding	251 (86.25)	40 (13.75)	00
Both lodging and boarding	265 (91.06)	22 (7.56)	00
Only Working lunch	160 (54.98)	123 (42.27)	08 (2.75)
Reimbursement of travel expenses	97 (33.33)	187 (64.26)	07 (2.40)
Local travels	118 (40.55)	146 (50.17)	27 (9.28)
Cultural evenings	140 (48.11)	47 (15.15)	104 (35.74)
Tours and trips to nearby tourist places	49 (16.84)	145 (49.83)	97 (33.33)

Figures in parenthesis denotes the percentages

Ratio of Theory : Practical Sessions : Maximum number of extension personnel (35.74%) stated that the appropriate theory: practical ratio of the training would be 30 : 70, followed by the ratio of 40 : 60 (19.24%), 50 : 50 (17.18%), 60 : 40 (15.46%) and 20 : 80 (12.37%) (Table 12). None of the

TABLE 12

Appropriate theory: practical ratio for training

Category	Extension Personnel (N=291)	Extension Supervisors (N=30)
Fully theory	00 (00.00)	00 (00.00)
80 theory: 20 practical	00 (00.00)	00 (00.00)
70 theory: 30 practical	00 (00.00)	00 (00.00)
60 theory: 40 practical	45 (15.46)	00 (00.00)
50 theory: 50 practical	50 (17.18)	15 (50.00)
40 theory: 60 practical	56 (19.24)	00 (00.00)
30 theory: 70 practical	104 (35.74)	02 (6.67)
20 theory: 80 practical	36 (12.37)	05 (16.67)
Fully practical	00 (00.00)	08 (26.67)

Figures in parenthesis denotes the percentages

extension personnel said that the training programme on ICTs for agriculture should comprise of only practical or theory sessions. A scrutiny of Table 4.18 also shows that half of the supervisors were of the opinion that theory to practical ratio should be 50 : 50, followed by full practical (26.67%), 20 : 80 (16.67%) and 30 : 70 (6.67%). Increasing the proportion of theoretical content beyond 50 per cent was not favored by the supervisors.

Training Approach : It was evident from the perusal of Table 13 that majority of the extension personnel (70.79%) felt that engaging participants in field activities and visits was the best approach, followed by engaging participants intensively in lab-based sessions (65.64%), video courses (51.89%), group work (42.27%), online/ distance learning activities (25.09%), project work (24.05%), engaging participants intensively in classroom (18.21%), attachment to a training center (16.49%) and audio courses (11.34%).

TABLE 13

Best approach for the training

Category	Frequency	Percentage
Engaging participants intensively in classroom	53	18.21
Engaging participants intensively in lab-based sessions	191	65.64
Engaging participants in field activities and visits	206	70.79
Group work	123	42.27
Project work	70	24.05
Online/distance learning activities	73	25.09
Audio courses	33	11.34
Video courses	151	51.89
Attachment to a training center	48	16.49

Multiple responses were obtained

Training Methods : The extension personnel were asked to rank 10 commonly used training methods from I to X, on the basis of their preference. The preference for each of the training methods were obtained using weighted mean score. Table 14 shows

TABLE 14

Preference on the training methods

Training Methods	Weighted Mean Score	Rank
Field visits	9.01	I
Demonstrations	8.97	II
Group discussion	8.68	III
Games	8.38	IV
Role play	8.30	V
Lecture	8.16	VI
Case study	8.10	VII
Workshop	7.97	VIII
Buzz session	7.42	IX
Brain storming	6.98	X

that the training methods which were rated amongst top three by the extension personnel were field visits, demonstrations and group discussion with a weighted mean score of 9.01, 8.97 and 8.68 respectively. Fourth rank was given to games (8.38), fifth to role play (8.30), followed by lecture (8.16), case study (8.10) and workshop (7.97). Ninth and tenth ranks were assigned to buzz sessions and brainstorming, with a weighted mean of 7.42 and 6.98, respectively. The available literature also highlights the importance of using various training methods during training programmes (Ali *et al.*, 2013; Schuenemann *et al.*, 2013; Anonymous, 2015 & Kumar *et al.*, 2018).

Useful Study Material : As mentioned in Table 15 about half of the extension personnel (54.98%) stated that having regular contact with the resource person after the training programmes would be useful, followed by website addresses / references and recommended further reading (51.89%), soft copy of presented material (42.61%), having an expert at the place of work (36.77%), hard copy of handouts / notes (29.55%) and workbooks (22.34%). An examination of Table 4.21 shows that, for providing support to the trainees, all supervisors believed that there should be regular contact with the resource persons, followed by providing hard copy of handouts/notes (56.67%), web addresses / reference and recommended further reading as well as

TABLE 15

Study material in the training programme*

Category	Extension Personnel (N=291)	Extension Supervisors (N=30)
Hard copy of elaborate handouts/notes of the content presented	86 (29.55)	17 (56.67)
Soft copy of the content presented	124 (42.61)	05 (16.67)
Website Addresses/ References and recommended further reading	151 (51.89)	10 (33.33)
Workbooks	65 (22.34)	00 (00.00)
Regular contact with the resource person	160 (54.98)	30 (100)
Having an expert at the place of work	107 (36.77)	10 (33.33)

(*) Multiple response; Figures in parenthesis denotes the percentages

provision of expert at workplace (33.33% each) and soft copy of the content presented during the training programme (16.67%).

Follow-up Activities of the Training Organization : As stated in Table 16, majority of the extension personnel (71.82%) revealed that the follow-up activity should be in the form of maintaining regular contact with the training institution, other participants and resource persons by forming the user groups,

TABLE 16

Follow-up activities of the training organization*

Category	Extension Personnel (N=291)	Extension Supervisors (N=30)
Periodic follow-up visits by trainers	116 (39.86)	09 (30.00)
Refresher courses	109 (37.46)	30 (100)
Sending regular publications	50 (17.18)	00 (00.00)
Maintaining regular contacts by forming user groups	209 (71.82)	25 (83.33)

(*) Multiple response; Figures in parenthesis denotes the percentages

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followed by provision of periodic follow-up visits by trainers (39.86%), refresher courses (37.46%) and sending regular publications (17.18%). On the other hand, all the supervisors recommended refresher courses as the follow-up activity, followed by maintaining regular contact by forming user groups (83.33%) and 30 per cent favoured periodic follow-up visits by the trainees. The option of sending regular publication to the trainees and their organizations was not mentioned by any of the supervisors (Table 16).

Evaluation of the Training : It was found that for conducting formative evaluation of the training programme (Table 17), 47.42 per cent extension personnel preferred active participation and response during sessions, followed by specific learner-based activities associated with each module (43.64%), recap sessions (28.87%),

TABLE 17

Evaluation of the training*

Category	Extension Personnel (N=291)	Extension Supervisors (N=30)
Formative evaluation		
Active participation and response during sessions	138 (47.42)	27 (90.00)
Surprise tests	59 (20.27)	07 (23.33)
Specific learner-based activityassociated with each module	127 (43.64)	02 (6.67)
Self-rated evaluation of the trainees	78 (26.80)	25 (83.33)
Quizzes	64 (21.99)	07 (23.33)
Recap sessions	84 (28.87)	02 (6.67)
Summative evaluation		
Home assignments with specific date of submission	13 (4.47)	20 (66.67)
Specific learner-based activity associated with each module	204 (70.10)	18 (60.00)
Self-rated evaluation of the trainees	106 (36.43)	12 (40.00)

(*)Multiple response; Figures in parenthesis denotes the percentages

self-rated evaluation of the trainees (26.80%), quizzes (21.99%) and surprise tests (20.27%). An overview of Table 17 clearly shows that a vast majority of the supervisors (90%) felt that evaluation must be done by observing the responses and participation of the trainees during the sessions. Besides this, 83.33 per cent supervisors felt that feedback from the trainees should be taken, followed by surprise tests and quizzes (23.33% each), and modular learner based activity as well as recap sessions (6.67% each).

Table 17 also depicts that majority of the extension personnel (70.10%) preferred specific learner-based activity associated with each module, followed by self-rated evaluation of the trainees (36.43%) and home assignments with specific date of submission (4.47%) for summative evaluation of the training. In case of supervisors, it was found that 66.67 per cent favoured giving home assignments to the trainees with a submission date. This was closely followed by specific learner based activity (60%) and feedback by trainee's (40%) for summative evaluation of the training programme. Research studies by Abi-Ghanem *et al.*, 2009; Ryan *et al.*, 2012 and Ali *et al.*, 2013 stated that pre and post training evaluation methods varied with the resources, circumstances and cultural conditions and commonly used evaluation methods were *viz.*, questionnaire - based feedback, discussions observation and agency-based evaluation.

On the basis of findings of the study it was concluded that majority of the extension personnel of the different components of public extension system of Uttarakhand possess low working experience of up to 10 years, specialized in the area of agricultural sciences and were educated up to post-graduate level. As far as the opinion on different aspects of training programme was concerned, most of the respondents felt that the training organization should be the Institution having expertise in ICTs, training duration must be of two weeks, resource person must be expert from the own organization / training institution of wither individuals who have worked in ICT4Ag.

The period from January to March was preferred time of the year, trainee must be the entry level extension professionals, number of trainee must be limited to 30, training must be free of cost with necessary arrangements of lodging, boarding and working lunches, theory practical ratio must be such that practical lessons are either equal or more than theory sessions with focus on approaches as well as methods involving lab-based and field based activities as well as visits, demonstrations, discussions, etc. Both the respondents agreed that get in regular touch with the resource person even after completion of training with provide necessary support afterwards as well, follow-up activities must comprises of refresher courses and maintaining regular contacts by forming user groups. The most preferred methods of formative evaluation were active participation and response during sessions, specific learner-based activity and self-rated evaluation of the trainees, whereas for conducting summative evaluation were home assignments with specific date of submission and specific learner-based activity. The opinion on various training aspects as mentioned in the present investigations thus, can serve to design and develop planned as well as structured ICT-based training interventions for the extension functionaries with enhanced outcomes for the staff and the system.

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