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Research Article

TRAINING NEEDS IDENTIFICATION FOR AGRICULTURAL OFFICERS

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Abstract: The study was conducted for training needs identification for Agricultural Officers of State Department of Agriculture in Southern Zone comprising of Chittoor, SPSR Nellore and YSR districts of Andhra Pradesh, India. The study identified the degree of importance of training needs under three categories *viz*., agricultural knowledge, extension and Human Resource Development. The results revealed among a total 23 training aspects needed under agricultural knowledge category, the top five ranked aspects include disease and pest identification and control, disaster management, farm machinery and Integrated Farming Systems. Whereas among 33 training needed aspects under extension needs category, top five ranked training aspects needed include, ICTs in Extension, training organization and its evaluation, IoT, Robotics and BigData technologies in Extension, technical documentation and reporting, Multimedia in extension and modern agricultural information sources. Among the 12 training aspects needed under Human Resource Development category include behavioral skills, event management, team working, time management, communication skills and stress management. Results of the perceived constraints for attending the training programmes include hectic departmental work load, more documentation and reporting work, a greater number of schemes to implement, trainings conducting at far off places, lack of minimum assured facilities at training centres, general training topics and no outside state exposure.

Keywords: *Agricultural Officers, Perceived constraints, Training needs, Human Resource Development*

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Introduction

Improvement in Trainings improve performance and results in better expected job performance of staff in any organization. The job training is given to an individual who is gainfully employed but required certain knowledge and skills to improve efficiency [1]. Government agricultural service Departments are more of Technical Officers who were bounded to transfer the technologies to the farming community. Further, updating the technical competencies of the Officers is always challenging because of less technology gestation period and location specific agricultural technologies. Further, due to changing scenarios like Government policies, preferences, new initiatives, application of new generation technologies and other strategic developmental activities, the Officer need to be trained periodically to update their knowledge.

In Department of Agriculture, Government of Andhra Pradesh, Agricultural Officers pools the major cadre and they are the key Officers for all departmental technical and administrative aspects working at the field level *i.e*., at Mandal level with direct contact with the intended clientele. Apart from organizing training programmes on various areas on agricultural technical aspects, other areas related to extension and Human Resource Development also needs to be identified. As the training needs of Officers changes over time, studies need to be conducted on periodical basis for identification of training needs by the Department and other training institutions for the betterment of the extension personnel and the Department as well [2].

The identified areas will help to refresh the ongoing training modules and to formulate new training modules by the training institutes like KVK, Agricultural Universities, State and Central Agricultural training institutes, NGOs and other training institutes. The identified areas will also help the policy makers to fund for trainings programmes on new areas for effective implementation of technology led extension services through the Department of Agriculture.

The study was conducted with an objective of identification of training needs of Agricultural Officers working in Department of Agriculture on aspects like agricultural knowledge, Extension and Human Resource Development. Further, constrains for attending training programmes were also studied.

Materials and Methods

Exploratory research design was adopted for the study. Agricultural Officers working in the Southern Zone of Andhra Pradesh comprising Chittoor, SPSR Nellore and YSR districts chosen for the study. To assess the training needs, after discussion with the Extension experts and review of literature, three categories were selected *viz*., Agricultural knowledge training needs, Extension training needs and Human Resource Development training needs. Among the three categories, after checking the job charts of the Officers, Extension subject experts and thorough review of literature, training areas were listed under each category. Apart for the identified areas for getting need opinion from the respondent, open ended questions were also kept to give the other training needs which were not pre-identified in the questionnaire. Perceived constrains for attending the training programmes were also studied.

An online survey instrument *i.e*., Google Form was designed with all the aspects to record the response of the Officers. Online survey form was mailed to Agricultural Officers working in the three districts. Out of 135 mailed online questionnaires, 68 Officers were replied with filled in responses. The response from the Officers was collected on the three-point rating scale namely, Most Needed, Needed and Not Needed and responses were quantified by assigning the scores of 3, 2 and 1, respectively. Training Need Index (TNI) was computed by using the formula:

Training Need Index (TNI)= (Score obtained)/ (Maximum obtainable score) x 100

Based on the TNI, the Need Hierarchy Rank was assigned for identification of most needed topics among the given category.

Results and Discussion

Category I: Training Needs on Agricultural Knowledge

Agricultural knowledge training needs include entire list of topics on which updated knowledge is required for the Officers to cater the needs of the farmers and to discharge their job duties effectively. When agricultural knowledge aspects were assessed for their need to get training, [Table-1] reveals that disease diagnosis and management (rank I), pest identification and control (rank II), disaster management in agriculture (rank III), farm machinery (rank IV) andIntegrated Farming Systems (rank V) were ranked as top five important training areas required by the Agricultural Office. Based on the results of the study, Agricultural Officers have to give the pest and diseases advisories to the farmers for this purpose they have to get updated on various latest methods for effective control. Similarly, disaster management aspects like cyclones, floods, dry spells, delayed monsoons and other natural disaster were recurrent and thus Officers were expecting training programmes to update their knowledge for effective mitigation. Due to acute shortage of labour, farmers are fully dependent on farm machinery for each and every step in cultivation. This situation led to more and more farm machinery usage and there by farmers' demands for more information on new farm machinery and Officers needs better training on farm machinery for effective implementation of various Government schemes on farm machinery. Due to increasing demand for farm diversification farmers were adopted more Integrated Farming Systems and thus Officers were felt important for trainings exclusively on various components, management, establishment and advanced practices on Integrated Farming Systems to transfer their knowledge to farmers.

Table-1 *Training needs on Agricultural Knowledge aspects as (n=68)*

SN	Training Need Aspects	TNI	Need Hierarchy Rank
1	Disease diagnosis and management	89.22	I
2	Pest identification and control	88.24	II
3	Disaster management in agriculture	86.27	III
4	Farm machinery	85.29	IV
5	Integrated farming system	84.31	V
6	Weed management	83.33	VI
7	Post harvest technology	80.88	VII
8	Crop nutritional aspects	80.88	VII
9	Improved crop varieties and hybrids	74.51	VIII
10	Eco-friendly agriculture	74.49	IX
11	Integrated crop management of major crops	74.49	IX
12	Seed production and processing	74.02	X
13	Agricultural weather	73.53	XI
14	Soil health management	71.08	XII
15	Value addition for entrepreneurship development	70.10	XIII
16	Recently developed agricultural technologies	70.10	XIII
17	Agronomic management practices	68.63	XIV
18	Drought management	67.65	XV
19	Dryland agriculture	66.18	XVI
20	Irrigation water management	65.69	XVII
21	Water resources conservation	64.71	XVIII
22	Bio-fertilizers and bio control agents	61.27	XIX
23	Agricultural economic aspects	59.31	XX

[Table-1] reveals indicate that, weed management (rank VI), Post Harvest Technology (rank VII), crop nutritional aspects (rank VII), improved crop varieties and hybrids (rank VIII) and both eco-friendly agriculture (rank IX), integrated crop management for major crops (rank IX) were ranked ninth. Post Harvest Technology is gaining importance now-a-days for proper processing and safe storage of crop produce and also crop nutritional aspects like major and micro nutrient deficiencies are highly recurrent and farmers expect more advices on these areas. Hence, the Officers ranked them important training needs. Inne Lego et al, (2018) [3] reported that training needs were higher in micronutrient problem. Eco-friendly agriculture like organic cultivation for keeping soil, environment, crop produce and ultimately for human health is gaining importance now-a-days and thus, Officers attached more importance for these training areas.

As per the training needs of [Table-1], among the other aspects ranked by the Officers include, seed production and processing (rank X), agricultural weather (XI), soil health management (rank XII), value addition for entrepreneurship development (XIII), recently developed agricultural technologies (rank XIII), agronomic management practices (rank XIV), drought management (rank XV), dryland agriculture (XVI), irrigation water management (XVII) and water resource conservation (XVIII), bio-fertilizers and bio control agents (rank XIX) and agricultural economic aspects (XX). The higher ranked aspects from rank ten to twenty were felt less important by the Officers and the training programmes on these areas can be conducted occasionally to benefit the newly recruited Officers.

Category II: Extension Training Needs

Department of Agriculture focused on the providing extension services to the farmers by various methods, programmes and activities. To conduct these activities Agricultural Officers need to be trained on new as well as existing extension aspects for better performance of their job tasks. After updating the Officer on agricultural knowledge aspects, the extension trainings will help to reach more farmers and to transfer the latest knowledge to the farmers through various extension activities.

Table-2 *Training Needs on various Extension aspects (n-68)*

S	Training Need Aspects	TNI	Need Hierarchy Rank
1	Information Communication Technologies (ICTs) in Extension	97.06	I
2	Training organisation and its evaluation	96.57	II
3	IoT, Robotics and big data technologies	96.57	II
4	Technical documentation and reporting	96.08	III
5	Multimedia in extension	93.63	IV
6	Modern agricultural information sources	93.14	V
7	Agricultural growth indicators	92.16	VI
8	Smart agriculture	91.67	VII
9	Social media management	91.18	VIII
10	Farmers' groups organisations formation	90.69	IX
11	IT based decision support systems	87.75	X
12	Mobile and internet-based extension services	87.25	XI
13	Impact assessment methods	84.80	XII
14	Extension management skills	81.37	XIII
15	Conduct of field demonstrations	77.45	XIV
16	Constraints identification and documentation	77.45	XIV
17	Use of participatory techniques in field extension	76.47	XV
18	Writing skills for farm literature	75.49	XVI
19	Geospatial technologies in Extension	75.49	XVI
20	Public private partnership in Extension	75.49	XVI
21	Extension teaching methods	73.53	XVII
22	Project management	73.53	XVII
23	Development of modern exhibitions material	72.06	XVIII
24	Preparation of Audio-Visual aids and training material	63.24	XIX
25	Gender sensitization in Extension	62.25	XX
26	Training and Visit system implementation	61.27	XXI
27	On-farm testing methods	60.29	XXII
28	Recent approaches in Extension	59.31	XXIII
29	Practical implementation of field extension methods	58.82	XXIV
30	Conduct of distance education programmes	50.00	XXV
31	Farmers' centre extension approaches	48.04	XXVI
32	Digital educational material preparation	48.04	XXVI
33	Change management	47.00	XXVII

Results of the [Table-2] revealed that, among the extension aspects which were perceived important based on their ranks, top ten ranked aspects include, Information Communication Technologies (ICTs) in Extension (rank I), training organization and its evaluation (rank II), IoT, robotics and Big data technologies (rank II), technical documentation and reporting (rank III), multimedia in extension (rank IV), modern agricultural information sources (rank V), agricultural growth indicators (rank VI), Smart agriculture (rank VII), Social Media management (rank VIII), Farmers' groups organisation formation (rank IX) and IT based decision support systems (rank X).

In this era of Information Technology, the Department of Agriculture is also harnessing the benefits of it and launching various digital programmes, tools and other applications for the implementation of extension programmes for farmers. Trainings on ICTs , IoT, Robotics and Big data will improve the digital knowledge skills of the Officers and thereby they can handle various IT enabled services effectively. The results emphasis the need to formulate training programmes on ICTs, IoTs and Smart Agriculture in a systematic manner. Conducting training programmes to the farmers, farmers` groups etc is one of the important job duties to be discharged by the Agricultural Officers and trainings on different training

modules and their assessment will help the Officers in conducting systematic training programmes with more advanced curricula and modules. Usage of Social Media for various Extension activities is one of the new training areas required to design the training curriculum for Agricultural Officers on various social media platforms and how to use them more professionally.

Other impotent Extension training need which were ranked from eleven to twenty include, mobile and internet based extension services (rank XI), impact assessment methods (rank XII), Extension management skills (XIII), conduct of field demonstrations (XIV), constraints identification (rank XIV), use of participatory techniques in field extension (XV), writing skills for farm literature (XVI), Geospatial technologies in Extension (XVI), public private partnerships in Extension (rank XVI), extension teaching methods (XVII), project management (rank XVII), development of modern exhibition materials (rank XVIII), Audio Visual aids preparation and training materials (XIX) and Gender sensitization in Extension (rank XX). Use of new frontier technologies like mobile based applications, web portals, online portal and Geospatial technologies like Global Positioning Systems (GPS), Geographic Information Systems (GIS) and Geo-fencing were now brought to usage in some of the extension programmes in the Agricultural Department. Hence, trainings on these areas are required to give more knowledge to the Officers. Further, new programmes on preparation of digital exhibitions, teaching material and Audio-Visual Aids will help to conduct the mass media programmes in an effective way and also to guide the other staff working with the Officers in the Department.

Other Extension training aspects needed ranked from twenty one to twenty seven include, Training and Visit system implementation (rank XXI), On-farm testing methods (XXII), recent approaches in Extension (rank XXIII), practical implementation of field extension methods (XXIV), conduct of distance education programmes (rank XXV), farmers centric new extension approached (XXVI), digital educational material preparation (XXVI) and change management (XXVII). The training needs on Training and Visit systems implementation, On-farm testing, recent approaches and distance education programmes were perceived less important, but conducting training programmes occasionally to help to improve the knowledge of Senior Officers and will benefit the newly recruited Officers in a big way.

Category III: Training Needs on Human Resource Development Aspects

To identify the training needs on Human Resource Development aspects required for Agricultural Officers, response on degree of importance on various aspects were recorded.

[Table-3] results infer that, among the various aspects ranked include, behavioral skills (rank 1), event management (rank II), team working (rank III), time management (rank III), communication skills (rank IV), stress management (rank V) and Online learning (rank IV) were among the top six ranked aspects among a total of 12 aspects studied. In an organization, Human Resources are the biggest asset. To perform the job duties and other activities Officers need to be trained to improve their soft skills. As the Officers are always engaged with the different groups of the society apart from the major clients i.e., farmers, behavioral skills and communication skills were at most important. As Agricultural Extension services and programmes are like events organized in a systemic manner, the well trained Officer on event management aspects, stress management and team working will help improve the overall impact of the programme in a positive direction.

Other Human Resource Development aspects which were perceived important by the Offices a per the [Table-3] include, on health management (rank VII), organisational ethics and morals (VIII), leadership development (rank IX), organisational climate (rank X) and strategic planning (rank XI). Recent innovations in education include online educational programmes in the form of MOOCs and other related online courses were being offered by many institutions at large. Training programmed on online learning platforms will help the Officers towards getting online education to improve their knowledge. Health management is also one of the important aspects on which trainings need to be organized because of changing life style, food habits and work pressure, many chronic health issues are becoming common and to overcome trainings on major health care aspects required for Officers need to be conducted to reduce their health hazards. As each and every organisation or department had a set of organizational ethics and morals along with its set organizational climate to be followed by the employees and trainings these areas are going to help the Officers to improve their overall desired organizational behaviour. As the Agricultural Officers are technical and administrative leaders in their jurisdiction by which they are not only lead the staff under their control but also lead the many extension activities and programmes being at front, trainings on leadership development results to adopt the best leadership styles by the Officers.

Table-3 *Training needs on Human Resource Development (n=68)*

SN	Training Need Aspects	TNI	Need Hierarchy Rank
1	Behavioral skills	97.06	I
2	Event management	91.18	II
3	Team working	87.25	III
4	Time management	87.25	III
5	Communication skills	86.27	IV
6	Stress management	80.88	V
7	Online learning	74.51	VI
8	Health Management	74.02	VII
9	Organizational Ethics and morals	69.61	VIII
10	Leadership development	60.29	IV
11	Organisational climate	59.31	X
12	Strategic planning	47.06	XI

Perceived constraints for attending the training programmes

Table-4 *Perceived constraints rendered by the Agricultural Officers for attending the training programmes (n=68)*

Aspect	Response		
	Frequency	Percentage	Rank
Hectic departmental work load at office	53	77.94	I
More documentation and reporting work	45	66.18	II
More number of different schemes to implement in a time bound manner	41	60.29	III
Trainings are provided at far off places	36	52.94	IV
Lack of minimum assured facilities at training centres like boarding, lodging etc.	32	47.06	V
Training topics are general and not specific to the purpose	18	26.47	VI
Trainings organized within the state and no exposure to outside the state	9	13.24	VII

[Table-4] revealed that the perceived constrains faced by the Agricultural Officers for attending the training programmes and based on their ranks include, hectic departmental work load at office (rank I), more documentation and reporting work (rank II), More number of different schemes to implement at a time bound manner (rank III), trainings are provided as far off places (rank IV), lack of minimum assured facilities at raining centres like boarding, lodging etc (rank V), training topics are general and not specific to the purpose (rank VI) and all the trainings organized within the state and no exposure to outside the state (rank VII).

The constraint of hectic Departmental work load was due to more diverse activities and additional duties that the Officers need to attend apart from field based scheduled field extension service activities. More work load which can be reduced by more manpower recruitment as reported by Said Rafiq Hanif and Gokul Khanderao Waman (2013) [4]. Due to real time information management systems developed by the Government, it was the responsibility of the Officers to catch up the uploading information on time bound basis and it can be overcome by conducting more training programmes for improving ICTs skills for documentation and information management. The constraint of going to training programmes to far off places can be overcome by conducting more training at the district level in the Agricultural University institutions and Krishi Vigyan Kendras. The Officers responded that trainings facilities like loading and boarding need to improve for attending the long duration training programmes were lacking and addressing this constraint will lead to effective participation of the Officers in the training programmes. It is also required to change the training topics and curriculum based on the latest identified training needs of the Officers. As some of the Officers felt that most for the Officers were trained within the state only, which can be addressed by deputing the Officers to the training programmes in other states for more diversified knowledge.

Conclusion

Identification of training needs for Agricultural Officers working in the Department of Agriculture is a periodically continuous process. Trainings will be result oriented when the training areas and topics to be covered in the training programmes were demand oriented by the participating Officers as well as on the ongoing programmes and future developmental strategies of the Department. The study identified the various training needs under three categories of agricultural knowledge, extension and Human Resource Development aspects. The identified aspects will help the training organisations to know the most needed trainings areas to revise the content and curriculum of the ongoing training programmes and also to design the new training programmes on some of the new areas identified. The study also unearthed some of the perceived constraints that were being faced by the Officers in attending the training programmes like more work load, general topics covered, trainings being offered at far off places and no outside state exposure. These constraints can be picked up one by one and get them solved by the concerned authorities at Departmental level and at the training organisations level.

Application of research: The study was most important for the training organisations to get the list of new training areas needed by the Department of Agricultural Officers. Knowing the list of needed aspects, the training calendars can be updated with new training courses and can make sufficient arrangements for their better conduct of the newly proposed trainings by preparation of new curriculum, training materials, resource persons and new infrastructure facilities.
Research Category:

Research Category: Identification of Training Needs

Abbreviations: AV Aids: Audio Visual Aids
ICTs: Information Communication Technologies
IoT : Internet of Things
IT : Information Technology
KVK : Krishi Vigyan Kendra
MOOCs: Massive Open Line Course
NGO: Non-Government Organisations
T&V System: Training and Visit System
TNI: Training Needs Index

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Study area / Sample Collection: Southern Zone comprising Chittoor, SPSR Nellore and YSR districts of Andhra Pradesh, India

Cultivar / Variety / Breed name: Nil

Conflict of Interest: None declared

Ethical approval: This article does not contain any studies with human participants or animals performed by any of the authors.
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