



Plant Archives

Journal homepage: <http://www.plantarchives.org>DOI Url : <https://doi.org/10.51470/PLANTARCHIVES.2026.v26.no.2.174>

ASSESSMENT OF TRAINING NEEDS OF VILLAGE AGRICULTURAL ASSISTANTS AT RYTHU SEVA KENDRAS: A STUDY FROM ELURU DISTRICT OF ANDHRA PRADESH, INDIA

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(Date of Receiving-06-07-2026; Date of Revision-29-08-2026; Date of Acceptance-03-09-2026)

ABSTRACT

Village Agricultural Assistants (VAAs) posted at Rythu Seva Kendras (RSKs) are the pivotal, single-window, village-level functionaries of the Andhra Pradesh agriculture department, and the effectiveness of last-mile technology transfer depends heavily on how well their competencies are kept updated. The present investigation was undertaken to assess the training needs of VAAs working at RSKs in Eluru district of Andhra Pradesh. A descriptive research design was followed, and 120 VAAs, selected through purposive and simple random sampling from 120 villages spread over nine mandals of three agricultural divisions, formed the sample. Training need was measured across seven functional areas - subject matter, communication and human relations, programme planning and evaluation, managerial/management, leadership, feedback and follow-up, and training activities - through a 53-item, three-point continuum schedule, and a Training Need Index (TNI) was worked out for every item to obtain area-wise rank order. Data were analysed using arithmetic mean, standard deviation, frequency, percentage, Karl Pearson's correlation coefficient and multiple linear regression (MLR). 'Latest/improved technology' (TNI = 83.45) emerged as the most pressing subject-matter need, while 'extension teaching method and aids' (TNI = 73.15), 'developing a programme/plan of work' (TNI = 74.18), 'executing programme' (TNI = 73.41), 'identification and use of opinion leaders' (TNI = 68.21), 'evaluation of field problems' (TNI = 69.11) and 'assessing the training needs of farmers' (TNI = 74.09) were the top-ranked needs within their respective functional areas. Overall, 62.50 per cent of the VAAs exhibited a medium level of training need, 23.34 per cent a high level and 14.16 per cent a low level (mean = 117.26, SD = 20.85). Education ($r = -0.738$), training exposure ($r = -0.462$) and perceived work load ($r = -0.565$) were significantly and negatively correlated with training need at the 0.01 level of probability, whereas job performance ($r = 0.229$), information-seeking behaviour ($r = 0.287$), job involvement ($r = 0.301$) and job satisfaction ($r = 0.419$) were significantly and positively correlated. Multiple linear regression showed that the ten selected profile characteristics jointly explained 71.20 per cent ($R^2 = 0.712$) of the variation in training need. The findings underscore the necessity of a structured, competency-linked in-service training curriculum for VAAs, with priority to technology updation, extension teaching skills, programme planning and training-needs-assessment skills, targeted particularly at less-educated, less-exposed and heavily-loaded VAAs, so as to strengthen the Rythu Seva Kendra extension delivery system.

Key words: Training Need Index; Village Agricultural Assistants; Rythu Seva Kendras; extension personnel; in-service training

Introduction

Agricultural extension is a knowledge-intensive service, and the competence of front-line functionaries largely determines how effectively new technologies

reach the farming community. Andhra Pradesh reorganised its village-level extension delivery through Rythu Seva Kendras (RSKs), single-window agri-input-cum-advisory centres in which the Village Agricultural

Assistant (VAA) is the key functionary responsible for input supply, e-crop booking, crop-cutting experiments, crop insurance facilitation, soil-testing referral and technology dissemination at the village level. The transformation of the VAA's role from a conventional extension worker to a multi-tasking, single-window functionary has widened the gap between what is expected of the incumbent and what he/she is currently equipped to perform, making a systematic training-need assessment indispensable for the success of the RSK model.

Training need has been defined as the gap between the desired level of job performance and the existing level of competence of the employee (Mishra, 1990), and its periodic measurement is considered a pre-requisite for designing responsive in-service training curricula for extension personnel (Lego *et al.*, 2018; Nongtdu *et al.*, 2012). Several workers have reported that extension functionaries across different Indian states and other developing countries generally exhibit a medium-to-high level of training need, and that this need is dynamic, changing with technology, job content and the profile of the incumbent (Hanif & Waman, 2013; Kshash, 2018; Yadav *et al.*, 2012). Profile characteristics such as education, training exposure, job involvement, job satisfaction and perceived work load have also been reported to be significantly associated with the extent of training need of extension personnel (Singh *et al.*, 2011; Kharde *et al.*, 2014; Joerges, 2002).

Although the RSKs have been functional in Andhra Pradesh for several years, no systematic, area-wise assessment of the training needs of VAAs, linked with their profile characteristics, is available in the published literature for the state. Against this backdrop, the present investigation was carried out with the specific objective of assessing the training needs of Village Agricultural Assistants working at Rythu Seva Kendras in Eluru district of Andhra Pradesh, and of examining the relationship of selected profile characteristics with the extent of their training need, so as to generate empirical evidence for designing a targeted in-service training programme for this cadre.

Materials and Methods

Locale and sampling design

The study was conducted in Eluru district of Andhra Pradesh, purposively selected owing to the researcher's familiarity with the local language and administrative set-up. Of the three agricultural divisions in the district, three mandals each were selected, giving nine mandals in all, viz., Pedavegi, Unguturu, Kaikaluru, Chintalapudi, Nuzivid,

Chatrai, T. Narasapuram, Dwaraka Tirumala and Buttayagudem. Of the 237 villages located in these nine mandals, 50 per cent (120 villages) were selected through simple random sampling, and the VAA posted at the RSK of every selected village was included purposively, giving a final sample size of 120 respondents. A descriptive research design was employed for the study.

Measurement of training need

Training need was operationalised as the gap between the desired and the existing level of knowledge/skill of the VAA (Mishra, 1990) and was measured through a structured schedule comprising 53 items distributed over seven functional areas, viz., subject matter (18 items), communication and human relations (9 items), programme planning and evaluation (7 items), managerial/management (8 items), leadership (3 items), feedback and follow-up (4 items) and training activities (4 items). Each item was rated by the respondent on a three-point continuum including great need, some need and little need, scored 3, 2 and 1, respectively, so that the composite score of a respondent could range between 53 and 159. The item-wise Training Need Index (TNI) was computed using the formula:

$$\text{TNI (\%)} = \frac{\text{Total score obtained}}{\text{Maximum obtainable score}} \times 100$$

Items were arranged in descending order of TNI to obtain the rank order within each functional area. The overall training-need score of every respondent was further classified, using mean and standard deviation as check-points, into low (below mean – SD), medium (mean $\pm$ SD) and high (above mean + SD) categories.

Independent variables and statistical analysis

Ten profile characteristics of the VAAs, viz., age, education, organisational climate, communication skills, job performance, training exposure, information-seeking behaviour, job involvement, perceived work load and job satisfaction, were correlated with the training-need score using Karl Pearson's product-moment correlation coefficient (r), tested against table values at ($n - 2$) degrees of freedom at the 5 per cent and 1 per cent levels of significance. The joint influence of the ten characteristics on training need was further examined through multiple linear regression (MLR):

$$Y = a + b_1X_1 + b_2X_2 + \dots + b_{10}X_{10}$$

Where,

Y is training need, a is the intercept and $b_1 \dots b_{10}$ are partial regression coefficients. All data were analysed using MS-Excel and SPSS software; arithmetic mean,

Table 1: Distribution of Village Agricultural Assistants according to their training needs in the area of subject matter. ($n = 120$).

Sr.	Training Area	TNI	Rank
1	Meteorological data in relation to crop production	59.12	XIII
2	Development of a crop production strategy based on agroclimatic conditions	79.85	II
3	Soil and water conservation technology	68.43	VII
4	Collection of soil samples	52.11	XVI
5	Preparation of integrated village action plan including contingency plan	72.68	IV
6	Identification of pests and diseases	66.34	IX
7	Integrated nutrient, pest management and weed control	64.11	X
8	Post-harvest technology	74.32	III
9	Demand and availability of inputs and market dynamics	61.82	XI
10	Management of horticultural crops	67.25	VIII
11	Livestock management	60.07	XII
12	Dairy production management	58.43	XIV
13	Handling, repairing and maintenance of improved agricultural implements including sprayers and dusters	70.19	VI
14	Latest / improved technology	83.45	I
15	e-crop booking	50.18	XVII
16	Free crop insurance	44.29	XVIII
17	Crop cutting experiments	53.47	XV
18	Maintenance and writing of records	70.93	V

standard deviation, frequency, percentage, correlation coefficient and multiple linear regression were the statistical tools employed to fulfil the objective of the study.

Results and Discussion

Training needs in the area of subject matter

The data on the training needs of VAAs in the area of subject matter are presented in Table 1.

‘Latest/improved technology’ secured the highest rank (TNI = 83.45), followed by ‘development of a crop production strategy based on agroclimatic conditions’ (79.85) and ‘post-harvest technology’ (74.32). ‘Preparation of integrated village action plan including contingency plan’ (72.68) and ‘maintenance and writing of records’ (70.93) occupied the fourth and fifth ranks. Comparatively lower needs were recorded for ‘free crop insurance’ (44.29), ‘e-crop booking’ (50.18), ‘collection of soil samples’ (52.11) and ‘crop cutting experiments’ (53.47). The high need for updated technical knowledge may be attributed to the rapid pace of technology change and inadequate periodic exposure of the VAAs to newer practices, whereas the comparatively low need for e-crop booking and insurance-related tasks reflects their routine, repetitive engagement with these operational duties. This finding is in agreement with Kshash (2018), who also reported technology-related items to be prioritised training needs among extension agents.

Training needs in the area of communication and human relations

Data on training needs in the area of communication and human relations are presented in Table 2.

‘Extension teaching method and aids’ ranked first (TNI = 73.15), followed by ‘planning, preparation, evaluation and use of audio-visual aids’ (69.84) and ‘demonstrations and field trials’ (67.21). ‘Rural leadership and working with village leader’ (50.38) and ‘use of extension literature’ (46.92) were the least prioritised. The predominance of teaching-method-related needs suggests limited exposure of VAAs to modern communication tools, while the low need for rural-leadership skills may stem from their sustained field-level interaction with local communities. This result is broadly consistent with the findings of Ahmed and Khalid (2013) on communication-related training gaps among extension workers.

Table 2: Distribution of Village Agricultural Assistants according to their training needs in the area of communication and human relations. ($n = 120$).

S.No.	Training Area	TNI	Rank
1	Extension teaching method and aids	73.15	I
2	Computer and internet	63.91	IV
3	Rural leadership and working with village leader	50.38	VIII
4	Moral building and development	57.44	VI
5	Group psychology and techniques in working with group	54.11	VII
6	Demonstrations and field trials	67.21	III
7	Organizing meetings, discussion, farmers day, exhibition and tours	61.35	V
8	Use of extension literature	46.92	IX
9	Planning, preparation, evaluation and use of audio-visual aids	69.84	II

Table 3: Distribution of Village Agricultural Assistants according to their training needs in the area of programme planning and evaluation. ($n = 120$).

S.No.	Training Area	TNI	Rank
1	Concept, principles and procedure of programme planning	66.23	IV
2	Steps and considerations in programme planning process and programme execution	69.72	III
3	Developing a programme/plan of work	74.18	I
4	Skill in conducting survey	61.88	V
5	Knowledge and skill in probing in depth for bringing on surface the rural problems of farmers	57.65	VII
6	Procedure and consideration in monitoring an extension programme	71.41	II
7	Planning through participatory approach	60.73	VI

Training needs in the area of programme planning and evaluation

Data on training needs in the area of programme planning and evaluation are presented in Table 3.

‘Developing a programme/plan of work’ (TNI = 74.18) was ranked first, followed by ‘procedure and consideration in monitoring an extension programme’ (71.41) and ‘steps and considerations in programme planning process and programme execution’ (69.72). ‘Knowledge and skill in probing in depth for bringing on surface the rural problems of farmers’ (57.65) recorded the lowest TNI. VAAs are typically engaged in executing pre-designed programmes rather than in their design and monitoring, which may explain the higher perceived need in the planning and monitoring domain, a pattern also reported by Yadav *et al.*, (2013) among extension functionaries handling organic-farming programmes.

Training needs in the area of managerial/management

Data on the training needs in the area of managerial/management are presented in Table 4.

‘Executing programme’ (TNI = 73.41) was ranked first, followed by ‘extension management’ (65.33) and ‘working out cost of cultivation of crops’ (64.11), while ‘preparation and submission of reports’ (49.87) was ranked lowest. Efficient programme execution is central to farmers deriving optimal benefit from RSK services, which may explain the high perceived need in this area; the comparatively low need for report writing indicates adequate familiarity gained through routine documentation duties. This result corroborates Okeowo (2015), who also

Table 4: Distribution of Village Agricultural Assistants according to their training needs in the area of managerial/management. ($n = 120$).

S.No.	Training Area	TNI	Rank
1	Executing programme	73.41	I
2	Extension management	65.33	II
3	Time management in field visits	56.92	VI
4	Effective utilisation of available resources	62.79	IV
5	Timeliness, feasibility and profitability of production recommendations	58.37	V
6	Working out cost of cultivation of crops	64.11	III
7	Preparation and submission of reports	49.87	VIII
8	Principles of coordination and team work	53.41	VII

reported programme-execution skills as a priority training area among extension personnel.

Training needs in the area of leadership

Data on the training needs in the area of leadership are presented in Table 5.

‘Identification and making use of opinion leaders and contact farmers in technology dissemination process’ was ranked first (TNI = 68.21), followed by ‘motivating farmers to adopt recommended practices and utilize the services available’ (65.74) and ‘speaking in meetings (public speaking)’ (61.19). Since the adoption of agricultural innovations is heavily influenced by opinion leaders, structured training on identifying and engaging such individuals appears critical, a conclusion also drawn by Murai *et al.*, (2017) with respect to leadership-linked training needs of extension personnel.

Training needs in the area of feedback and follow-up

Data on the training needs in the area of feedback and follow-up are presented in Table 6.

Table 5: Distribution of Village Agricultural Assistants according to their training needs in the area of leadership. ($n = 120$).

S.No.	Training Area	TNI	Rank
1	Identification and making use of opinion leaders and contact farmers in technology dissemination process	68.21	I
2	Motivating farmers to adopt recommended practices and utilize the services available	65.74	II
3	Speaking in meetings (public speaking)	61.19	III

Table 6: Distribution of Village Agricultural Assistants according to their training needs in the area of feedback and follow-up. ($n = 120$).

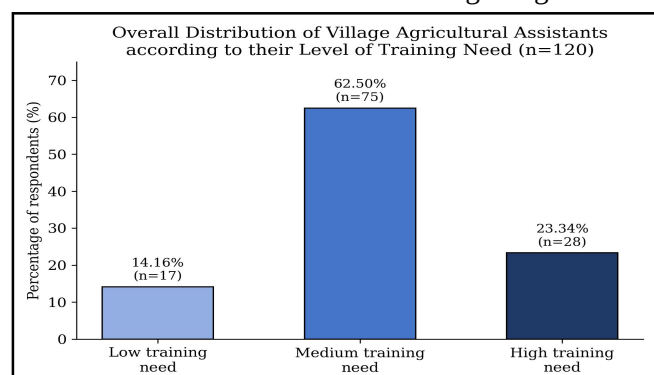
S.No.	Training Area	TNI	Rank
1	Evaluation of field problems	69.11	I
2	Follow-up action to be taken in adoption, partial adoption and non-adoption of recommended practices by farmers	65.23	II
3	Selecting evaluation criteria	63.42	III
4	Methods of giving and receiving feedback about field and operational problems	59.44	IV

‘Evaluation of field problems’ (TNI = 69.11) was ranked first, followed by ‘follow-up action to be taken in adoption, partial adoption and non-adoption of recommended practices’ (65.23), while ‘methods of giving and receiving feedback about field and operational problems’ (59.44) was ranked lowest. Effective evaluation is key to timely field-level intervention, which may explain the high perceived need for training in this competency, consistent with the observations of Haruna and Abdullahi (2013) on feedback-related capacity gaps among extension agents.

Training needs in the area of training activities

Data on the training needs in the area of training activities are presented in Table 7.

‘Assessing the training needs of farmers’ (TNI = 74.09) was ranked first, followed by ‘organising farmers’ training programmes’ (65.26), ‘effective participation methodology in fortnightly training sessions’ (64.18) and ‘conducting training sessions for farmers’ (62.11). Since identifying farmers’ specific improvement areas is fundamental to enhancing their livelihoods, capacity building in training-needs-assessment skills for VAAs themselves emerges as a high priority, in line with Man *et al.*, (2016), who highlighted needs-assessment competence as central to effective extension training design.

**Fig. 1:** Overall distribution of Village Agricultural Assistants according to their level of training need.**Table 7:** Distribution of Village Agricultural Assistants according to their training needs in the area of training activities. ($n = 120$).

S.No.	Training Area	TNI	Rank
1	Assessing the training needs of farmers	74.09	I
2	Organising farmers’ training programmes	65.26	II
3	Effective participation methodology in fortnightly training sessions	64.18	III
4	Conducting training sessions for farmers	62.11	IV

Overall training needs of Village Agricultural Assistants

The overall distribution of respondents according to their level of training need is presented in Table 8 and Fig. 1.

The majority of respondents (62.50%) fell in the medium training-need category, while 23.34 per cent had a high level and 14.16 per cent a low level of training need (mean = 117.26, SD = 20.85). This trend may primarily be attributed to the continuous role of training in updating job-specific knowledge and skills, most VAAs requiring only a moderate level of further training to remain effective in job performance. This finding is in line with the observations of Kharde *et al.*, (2014) and Yadav *et al.*, (2012), who also reported a preponderance of medium-level training need among extension functionaries.

Relationship between profile characteristics and training needs

To examine the association between the profile characteristics and the training need of VAAs, correlation coefficients (r) were computed; the values are presented in Table 9 and Fig. 2.

Education ($r = -0.738$), training exposure ($r = -0.462$) and perceived work load ($r = -0.565$) exhibited a highly significant negative relationship with training need, while job performance ($r = 0.229$) was significantly and positively related at the 0.05 level, and information-seeking behaviour ($r = 0.287$), job involvement ($r = 0.301$) and job satisfaction ($r = 0.419$) showed a highly significant positive relationship at the 0.01 level. Age ($r = 0.093$),

Table 8: Distribution of Village Agricultural Assistants according to their overall level of training need.

S.No.	Category	Frequency	Percentage
1	Low training need	17	14.16
2	Medium training need	75	62.50
3	High training need	28	23.34
	Total	120	100.00
<i>Mean = 117.26; SD = 20.85</i>			

Table 9: Correlation coefficients between profile characteristics and training needs of Village Agricultural Assistants.

Variable No.	Independent variable	'r' value	Significance
X1	Age	0.093	NS
X2	Education	-0.738	**
X3	Organisational climate	-0.135	NS
X4	Communication skills	-0.118	NS
X5	Job performance	0.229	*
X6	Training exposure	-0.462	**
X7	Info-seeking behaviour	0.287	**
X8	Job involvement	0.301	**
X9	Perceived work load	-0.565	**
X10	Job satisfaction	0.419	**
* Significant at 0.05 level of probability; ** Significant at 0.01 level of probability; NS: Non-significant			

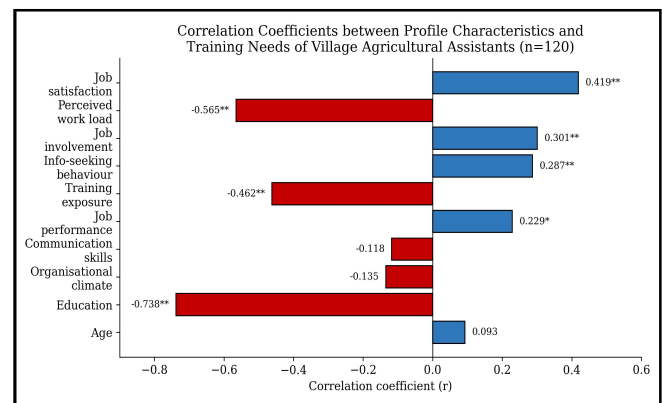
organisational climate ($r = -0.135$) and communication skills ($r = -0.118$) were not significantly related to training need. The strong negative association of education and training exposure with training need suggests that VAAs with higher educational qualifications and greater prior training exposure possess a stronger grasp of technical and functional competencies and therefore require comparatively less further training, a finding consistent with Singh *et al.*, (2011) and Kharde *et al.*, (2014). Similarly, VAAs reporting a higher perceived work load appear to acquire practical proficiency through the sheer diversity of tasks handled, thereby reducing additional training requirements. Conversely, VAAs with higher job performance, information-seeking behaviour, job involvement and job satisfaction are likely to be more conscious of their own knowledge gaps and hence report a greater need for training, in agreement with Joerger (2002).

Multiple linear regression analysis of profile characteristics with training needs

The combined effect of the ten selected profile

Table 10: Multiple linear regression analysis of profile characteristics with training needs of Village Agricultural Assistants.

Var. No.	Independent variable	SE	'b' value	't' value	'p' value	Sig.
X1	Age	0.146	0.078	0.53	0.598	
X2	Education	0.124	-0.695	-5.601	0.000	**
X3	Organisational climate	0.139	-0.089	-0.646	0.523	
X4	Communication skills	0.115	-0.068	-0.592	0.558	
X5	Job performance	0.131	0.229	2.244	0.027	*
X6	Training exposure	0.139	-0.437	-3.531	0.001	**
X7	Info-seeking behaviour	0.115	0.305	3.712	0.000	**
X8	Job involvement	0.111	0.328	3.951	0.000	**
X9	Perceived work load	0.109	-0.488	-4.482	0.000	**
X10	Job satisfaction	0.128	0.417	3.908	0.000	**
$R^2 = 0.712$; * Significant at 0.05 level of probability; ** Significant at 0.01 level of probability						

**Fig. 2:** Correlation coefficients between profile characteristics and training needs of Village Agricultural Assistants.

characteristics on training need was examined through multiple linear regression; the results are presented in Table 10.

The coefficient of determination ($R^2 = 0.712$) indicates that the ten selected profile characteristics, taken together, accounted for 71.20 per cent of the total variation observed in the training need of VAAs, the remaining 28.80 per cent being attributable to other unmeasured factors. Among the individual predictors, education ($b = -0.695$, $p < 0.01$), training exposure ($b = -0.437$, $p < 0.01$) and perceived work load ($b = -0.488$, $p < 0.01$) contributed significantly and negatively, while job performance ($b = 0.229$, $p < 0.05$), information-seeking behaviour ($b = 0.305$, $p < 0.01$), job involvement ($b = 0.328$, $p < 0.01$) and job satisfaction ($b = 0.417$, $p < 0.01$) contributed significantly and positively to the prediction of training need. Age, organisational climate and communication skills did not emerge as significant predictors in the regression model. These results reinforce the correlation findings and confirm education, prior training exposure and perceived work load as the strongest negative determinants, and job satisfaction, job involvement and information-seeking behaviour as the strongest positive determinants of the training need of VAAs.

Conclusion

The study revealed that Village Agricultural Assistants working at Rythu Seva Kendras in Eluru district predominantly perceive a medium level of overall training need (62.50%), with technology updation, extension teaching skills, programme planning, programme execution, leadership in technology dissemination, evaluation of field problems and training-needs-assessment skills emerging as the highest-priority areas across the seven functional domains examined. Education, training exposure and perceived work load were significant negative correlates, whereas job performance, information-seeking behaviour, job involvement and job satisfaction were significant positive correlates of training need, together explaining 71.20 per cent of its variation. These findings suggest that in-service training programmes for VAAs should be modular and need-based rather than uniform, with intensive inputs on the latest agricultural technologies, extension teaching aids, programme planning and monitoring, and training-needs-assessment skills, and should be particularly targeted at VAAs with lower educational qualification, limited prior training exposure and lower job satisfaction. Periodic, evidence-based re-assessment of training needs, on the lines demonstrated in this study, would help the Department of Agriculture, Andhra Pradesh, design a more responsive and effective capacity-building strategy for the Rythu Seva Kendra extension system.

Acknowledgement

The authors gratefully acknowledge the Department of Extension Education, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi, for institutional support, and the Village Agricultural Assistants of Eluru district, Andhra Pradesh, who participated in this study for their time and cooperation.

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