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RESEARCH ARTICLE

Impact of KVK Activities on Farmers Preparedness for Agricultural Operations

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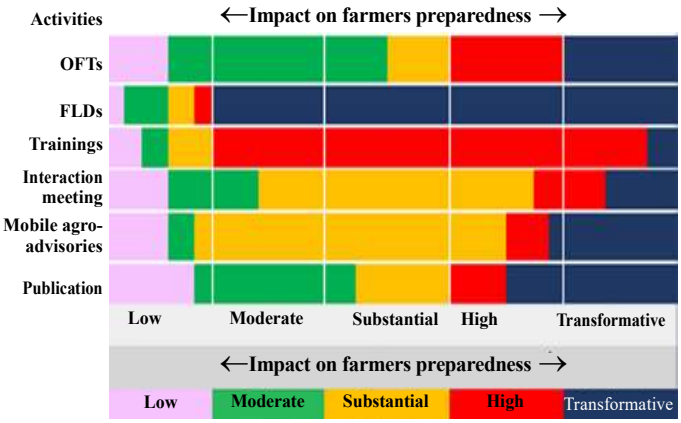
HIGHLIGHTS

- The study examines the influence of KVK activities on farmers readiness for agricultural operations in various components of crop planning, resource management, technology adoption and more.
- The impact on farmers preparedness is evaluated activity wise.
- The study reveals the relationship between KVK efforts and impact.

GRAPHICAL ABSTRACT



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ABSTRACT

Context: Krishi Vigyan Kendras (KVKs) serve as knowledge and resource hubs, relentlessly working towards improving the preparedness of farmers for various agricultural operations. KVK, is conducting OFTs, FLDs, training programmes, farmer scientist interaction meetings, delivering mobile agro-advisories and publishing information materials in the service of farmers.

Objective: The study aimed to assess the influence of KVKs activities on farmers readiness for agricultural operations, shedding light on the pivotal role played by these initiatives in enhancing farming preparedness.

Method: The study was taken up in 2022-23 in the jurisdiction of KVK NTR district of Andhra Pradesh. Ex-post facto research design was adopted. The sample was collected from 150 participating farmers using simple random sampling procedure. A sample of 30 non-participating farmers were also sampled as control. Data was collected using structured schedule developed based on the objective of the study. Statistical tools namely frequency, percentage, weighted mean and t-test were calculated to interpret the data.

Results & Discussion: The impact is indicated by the mean score on a five-point continuum from 1 to 5. Based on the mean scores weighted mean was calculated and recorded as 3.03 for participating farmers and 1.78 for non-participating farmers. T statistic recorded was 2.501, p value 0.039 indicating a significant difference in the impact of participating and non- participating farmers. hence null hypothesis is rejected and alternate hypothesis is accepted. More than one third of the respondents perceived moderate (39.00%) impact of OFTs, transformative (81.00%) impact of FLDs, high (78.00%) impact of trainings, substantial (56.00%) impact of mobile agro-advisories and moderate (36.00%) impact of publications.

Significance: The study emphasizes the impact of KVK activities on farmers preparedness for agricultural operations, examining the extent of impact of each activity and explores the relationship between the efforts invested and impact achieved.

The word "prepare" has its origin from the Latin word "praeparare," where "prae" means "before" or "in advance" or “getting ready”. Preparedness means making arrangements in advance. We make arrangements in advance for almost many things in routine that which has short term effect. For things with medium and long-term consequences, it becomes essential to plan in advance by anticipating and forecasting the situation. Advance preparations are crucial for risk mitigation, ensuring safety and minimizing the impact of emergencies. Such measures cultivate resilience and empower timely responses from individuals. Agriculture is the backbone for India and approximately 70 per cent of the population are dependent on it. In farming, a farmer engages with numerous elements beyond their control, all managed by nature. When things are out of control, it is necessary on the part of the farmer to be prepared for agricultural operations (Jyothi *et al.* 2020). KVKs at district level are diligently striving to ensure that farmers are well prepared for their agricultural operations. KVKs are a model for adaptive research to diagnose and solve problems emerging from district agro-ecosystems. KVKs are perfectly located to lead and incubate local innovation to achieve desired goal (Bhatt and Katole 2017), reach farmers with the technical inputs from lab to land in promoting scientific cultivation practices (Bhuvana *et al.* 2020). Training is a critical input for quick transfer of technology and a way to improve agriculture and to uplift socio economic conditions (Dobariya *et al.* 2017). Even Dr.K.L.Rao KVK, Garikapadu, Jaggaiahpet mandal, NTR District, Andhra Pradesh under administrative control of Acharya N G Ranga Agricultural University is working earnestly to thoroughly prepare farmers for their agricultural activities. To fulfil the mandate this KVK has been conducting multifaced activities namely On Farm Trials, Front Line Demonstrations (Jyothi and Venkata Subbaiah, 2019; Venkata Subbaiah and Jyothi, 2019 & 2020; Venkata Subbaiah *et al.,* 2020), soil, plant problem diagnosis and remedy; surveillance and forecasting of pest and diseases (diagnostic surveys); popularization of biological control; production of quality seed & plant material; popularization of improved agricultural implements (Venkata Subbaiah *et al.,* 2020) and storage technologies; maintaining farm information and guidance center; practicing sustainable agriculture and environmental pollution control (Vijayabhinandana *et al.,* 2018) village adoption; publication of information materials (Jyothi *et al.* 2018); organization of field days, training programmes, farmers scientist interaction meetings; income generation activities to farm women and rural youth, timely mobile agro advisories to stakeholders (Jyothi *et al.,* 2020) etc. The purpose of all these activities is to solve the present problems in agriculture and prepare the farmers for future agricultural operations. At this juncture, a study was conducted to know the impact of KVK Activities on farmers preparedness for agricultural operations.

METHODOLOGY

The study was conducted in NTR District of Andhra Pradesh during 2022-23 in the jurisdiction of the KVK as presented in Fig.1. The study area is located at 16.53^0 latitude and 80.06^0 longitude and an altitude of 84.4 MSL. As the incidents has already occurred, an ex-post facto research design was used for the study. Using simple random sampling procedure a sample of 150 farmers participating in KVK programmes were selected from six villages Konduru, Gampalagudem, Jaggayyapeta, Chandralapadu, Ibrahimpatnam and Mylavaram of the district. This sample was as participating farmers. The farmers cultivating atleast three crops in a year were selected for the study. A sample of 30 farmers who did not participate in any of the KVK programmes were also selected and named as non-participating farmers used as control. A structured schedule was constructed to measure the impact of KVK activities on farmers preparedness for agricultural operations. The schedule consisted of seven components with relevant sub-components for each. All the components were firstly subjected to priority ranking by the respondents. Based on their response’s & weights were calculated as crop planning (0.10), resource management (0.21), technology adoption (0.16), training and knowledge (0.11), market access (0.20), financial planning (0.12) and other factors (0.10). The respondents were then asked to rate each of these sub-components on a five-point continuum whose score ranged from 1 to 5. For each sub-component the responses of all the respondents were summed up and mean score was calculated. Based on the weights and mean scores, the weighted mean was calculated using the below given formula.

$$\text{Weighted Mean} = \frac{\sum_{i=1}^{n}(Weight_i \times Mean\ Score_i)}{\sum_{i=1}^{n} Weight_i}$$

Where n is the number of different mean scores

and weight 'i', represents the weight assigned to the i^{th} mean score 'i', is the i^{th} mean score, sigma (Σ) notation is used to represent the summation of terms from i=1 to n. The weighted means of participating farmers and non-participating farmers (control) were compared using t-test. The Null Hypothesis (H_o) was that there is no significant difference in Impact between the participating and non-participating farmers. While the Alternate Hypothesis (H_1) was that there is a significant difference in Impact between the participating and non-participating farmers.

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

Where $\bar{x}_1$ and $\bar{x}_2$ are the means of two groups participating farmers and non-participating farmers respectively, s_1 and s_2 are the standard deviations of two groups, n_1 and n_2 are the sample sizes of two groups. The participating farmers were also asked to indicate the perceived impact of six KVK activities namely OFTs, FLDs, Trainings, Interaction meetings, Mobile agro-advisories, Publications on a five-point continuum ranging as low, moderate, substantial, high and transformative. Frequency and percentages were calculated.

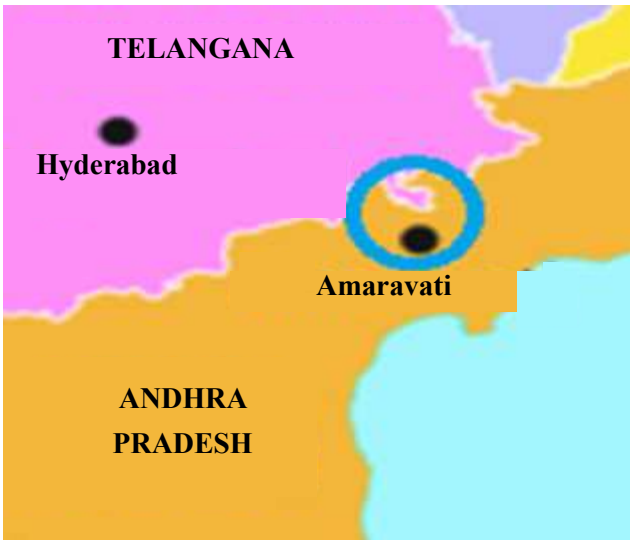

Fig 1. Map outlining the study area

RESULTS

Impact of KVK activities on farmers preparedness : The results are presented in Table 1. The impact is indicated by the mean score on a five-point continuum from 1 to 5. The results of participating farmers in the component crop planning, the mean scores recorded were crop diversity (2.9), seed selection (3.6), planning for climate variability (3.8) and adoption of recommended practices (3.7). In the element resource management, the mean scores recorded were water use efficiency (2.4), soil health management (3.1) and organic farming practices (2.2). In the aspect of technology adoption, the mean scores recorded were use of improved seeds (3.7), mechanization (4.1) and precision farming (1.7). In the component training and knowledge, the mean scores recorded were participation in training programs (3.2), knowledge application (3.0) and awareness of new practices (3.3). In the element market access**,** the mean scores recorded were market research (3.2), participation in farmer cooperatives (2.5) and effective marketing strategies (2.9). In the aspect of financial planning, the mean scores recorded were budgeting for operations (3.2) and financial resource management (3.0). Regarding other factors, the mean scores recorded were risk & vulnerabilities assessment (2.9), communication system adopted (4.3), technological integration for monitoring and response (3.3), collaboration among stakeholders (2.9) and learning from past experiences (3.2).

In contrast, non-participating farmers generally had lower mean scores across all components. In crop planning, the mean scores recorded were crop diversity (1.5), seed selection (3.0), planning for climate variability (1.1) and adoption of recommended practices (1.7). In the element resource management, the mean scores recorded were water use efficiency (1.4), soil health management (1.2) and organic farming practices (1.5). In the aspect of technology adoption, the mean scores recorded were use of improved seeds (1.6), mechanization (1.9) and precision farming (1.1). In the component training and knowledge, the mean scores recorded were participation in training programs (1.0), knowledge application (1.1) and awareness of new practices (1.9). In the element market access**,** the mean scores recorded were market research (1.5), participation in farmer cooperatives (1.6) and effective marketing strategies (2.5). In the aspect of financial planning, the mean scores recorded were budgeting for operations (1.9) and financial resource management (2.7). Regarding other factors, the mean scores recorded were risk & vulnerabilities assessment (2.3), communication system adopted (3.6), technological integration for monitoring and response (2.2), collaboration among stakeholders (2.1) and learning from past experiences (3.3).

Based on the mean scores weighted mean was calculated and recorded as 3.03 for participating farmers and 1.78 for non-participating farmers i.e control. T statistic recorded was 2.501, p value 0.039 indicating a significant difference in the impact of participating and non- participating farmers. Hence, null hypothesis is rejected and alternate hypothesis is accepted.

Activity wise impact on farmers preparedness: The results are presented in Table 2. More than one third of the respondents perceived moderate (39.00%) impact of OFTs, followed by transformative (21.00%), high (18.00%), substantial (12.00%) and low (10.00%). Majority of the respondents perceived transformative (81.00%) impact of FLDs, followed by high (9.00%), moderate & substantial (4.00% each) and low (2.00%). Majority of the respondents perceived high (78.00%) impact of trainings, followed by substantial (9.00%) transformative & moderate (5.00% each) and low (3.00%). Nearly half of the respondents perceived substantial (47.00%) impact of interaction meetings, followed by moderate (26.00%), transformative (16.00%), high (7.00%) and low (4.00%). More than half of the respondents perceived substantial (56.00%) impact of mobile agro-advisories, followed by transformative (23.00%), low (9.00%), moderate (7.00%), high (5.00%). More than one third of the

Table 1. Impact of KVK activities on farmers preparedness for agricultural operations

Particulars	Mean Score	
	Participating Farmers (n_1=150)	Non-participating Farmers (Control) (n_2=30)
I. *Crop Planning (Weight: 0.10)*		
Crop diversity (1: Monoculture, 5: Diverse crops with rotation)	2.9	1.5
Seed selection (1: No consideration for seed quality, 5: Regular use of high-quality seeds)	3.6	3.0
Planning for climate variability (1: No climate-resilient planning, 5: Incorporates climate-smart practices)	3.8	1.1
Adoption of recommended practices (1: No adherence to recommended practices, 5: Consistently follows recommended guidelines)	3.7	1.7
II. *Resource management (Weight: 0.21)*		
Water use efficiency (1: Inefficient water use, 5: Adopts water-saving practices)	2.4	1.4
Soil health management (1: Neglects soil health, 5: Implements soil health practices)	3.1	1.2
Organic farming practices (1: No use of organic practices, 5: Significant use of organic farming)	2.2	1.5
III. *Technology adoption (Weight: 0.16)*		
Use of improved seeds (1: Rarely uses improved seeds, 5: Consistent use of improved varieties)	3.7	1.6
Mechanization (1: Limited use of machinery, 5: Adopts modern agri. machinery)	4.1	1.9
Precision farming (1: No precision farming practices, 5: Implements precision agriculture technologies)	1.7	1.1
IV. *Training and knowledge (Weight: 0.11)*		
Participation in training programs (1: Rarely attends training programs, 5: Actively participates in training)	3.2	1.0
Knowledge application (1: Limited application of acquired knowledge, 5: Applies knowledge effectively on the farm)	3.0	1.1
Awareness of new practices (1: Limited awareness of new practices, 5: Keeps abreast of emerging trends)	3.3	1.9
V. *Market access (Weight: 0.20)*		
Market research (1: Does not conduct market research - 5: Regularly conducts market research)	3.2	1.5
Participation in farmer cooperatives (1: No participation in cooperatives, 5: Active involvement in cooperatives)	2.5	1.6
Effective Marketing Strategies (1: Ineffective marketing strategies. 5: Successful marketing approaches)	2.9	2.5
VI. *Financial planning (Weight: 0.12)*		
Budgeting for operations (1: Poor budgeting practices, 5: Effective budgeting for operations)	3.2	1.9
Financial resource management (1: Inefficient use of financial resources, 5: Efficient management of financial resources)	3.0	2.7
VII. Other factors (Weight: 0.10)		
Risk & vulnerabilities assessment (1: Poor, 5: Very good)	2.9	2.3
Communication system adopted (1: Local, 5: Scientific)	4.3	3.6
Technological Integration for monitoring and response (1: Primitive technologies used, 5: Latest technologies used)	3.3	2.2
*Collaboration among stakeholders (*1: Poor, 5: Greater extent)	2.9	2.1
Learning from past experiences (1: No learning, 5: Greater extent)	3.2	3.3
Weighted Mean	3.02	1.78
Pooled Standard deviation	2.48	
T statistic	2.501	
Degrees of freedom	24	
p value	0.039	

respondents perceived moderate (36.00%) impact of publications, followed by transformative (28.00%), substantial (15.00%), low (12.00%) and high (9.00%).

Matrix on the impact and efforts of KVK: Significant time, physical efforts and mental energy is vested by KVK in conducting programs for farmers, aiming to adequately equip them for agricultural operations. Hence, the efforts of KVK and impact on farmers preparedness for agricultural operations were compared in the Fig 2. Efforts was taken on X axis and impact on Y axis. The impact ranged from low to high while efforts ranged from easy to hard. The four combinations are presented below

High impact- hard efforts: Trainings and FLDs required substantial efforts resulted in high impact on enhancing farmer preparedness for agricultural operations.

High impact- easy efforts: Interaction meetings and mobile advisories demanded minimal effort but significantly boosted farmer preparedness for agricultural operations.

Low impact- hard efforts: On-Farm Trials demanded increased efforts yet resulted in a limited impact on farmer preparedness for agricultural operations

Low impact- easy efforts: Creating publications required minimal effort but had a restricted impact on enhancing farmer preparedness for agricultural operations.

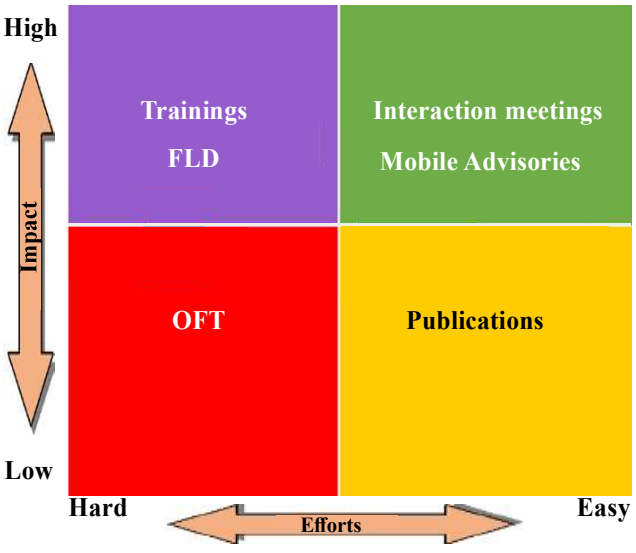

Fig 2. Matrix on the impact and efforts of KVK

DISCUSSION

Impact of KVK activities on farmers preparedness: The T-statistic of 2.501 suggests a significant difference between the impact of participating and non-participating farmers. The p-value of 0.039 is below the conventional significance level of 0.05, indicating that the observed difference is statistically significant. The results suggest that there is a statistically significant difference in the impact between participating and non-participating farmers based on the calculated weighted mean scores. The rejection of the null hypothesis supports that the participation of farmers in KVK activities has significant impact on farmers preparedness than non-participation. The findings are in conformity with that reported by Kishor Kumar*et al.,* (2019).

Activity wise impact on farmers preparedness: OFTs and publications had a moderate impact, signifying a noticeable yet moderate influence on the intended outcomes. The effects contributed meaningfully to the goals but were not transformative and widespread. Transformative impact was achieved through FLDs, representing the pinnacle on the continuum where actions resulted in transformative change. The effects were profound, revolutionary and had a far-reaching impact, leading to a fundamental shift in the intended outcomes. Significant high impact was achieved through trainings, indicating a substantial and transformative influence on the intended outcomes. Initiatives at this level led to substantial changes that had a profound and positive effect on the target area or community. The impact was substantial through interaction meetings and mobile agro-advisories,

Table 2. Activity wise impact on farmers preparedness for agricultural operations

KVK Activity	Extent of Impact									
	Low		Moderate		Substantial		High		Transformative	
	No.	%	No.	%	No.	%	No.	%	No.	%
OFTs	15	10.00	59	39.00	18	12.00	27	18.00	32	21.00
FLDs	3	2.00	6	4.00	6	4.00	14	9.00	122	81.00
Trainings	5	3.00	8	5.00	14	9.00	117	78.00	8	5.00
Interaction meetings	6	4.00	39	26.00	71	47.00	11	7.00	24	16.00
Mobile agro-advisories	14	9.00	11	7.00	84	56.00	8	5.00	35	23.00
Publications	18	12.00	54	36.00	23	15.00	14	9.00	42	28.00

reflecting a higher level of influence where initiatives made substantial contributions to the intended outcomes. The effects were noteworthy, leading to meaningful changes that were noticeable and had a broad reach. The findings are in conformity with that reported by Shobhana and Shilpi (2013); Holkar *et al.* (2019); Sandhu and Chauhan (2020); Adhikari *et al*. (2021); Devi *et al.* (2022); Bamne *et al.* (2023) and Bharath *et al.* (2023).

Matrix on the impact and efforts of KVK: The impact of trainings and FLDs is attributed to hands-on learning, practical knowledge transfer and skill development. This ensures farmers are well-prepared for efficient and effective agricultural practices. Interaction meetings equip farmers through valuable knowledge transfer, while mobile advisories swiftly reach them, promoting efficiency in farming practices without imposing undue burdens. Despite increased efforts in On-Farm Trials, the impact on farmer preparedness for agricultural operations remained limited as they are connected to assessment and refinement of technologies limited to area and farmers. Despite minimal effort in creating publications, the impact on enhancing farmer preparedness for agricultural operations was restricted as they are always an additional and supplementary information materials. KVKs can concentrate on activities that need less efforts and gain high impact.

CONCLUSION

Preparedness encompasses proactive measures taken to confront the challenges in agriculture to reduce the vulnerabilities and enhance the capacities of farmers to respond efficiently. The importance of preparedness in agriculture extends beyond individual farms to impact global food security, environmental sustainability and the well-being of farming communities. It is a key factor in building resilience, adapting to changing conditions and ensuring the long-term viability of agricultural systems. The activities of the KVK have significantly enhanced farmers preparedness for agricultural operations through various programs, knowledge dissemination and hands-on trainings. Through these efforts the farmers are empowered with valuable knowledge, skills and information, thus getting them ready and prepared to combat with the challenges in agriculture.

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Declaration of competing interest:

Author has no competing interests.

Data availability :

Data would be made available on request

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Appendix :

The supplementary data, table, graph in jpeg format for online visibility to the readers are submitted as an appendix.

Authors' contribution :

The author solely conceptualized and operationalized the study. The data was analysed, interpreted and written as a research article, The author approve the content of the manuscript and agree to be held accountable for the work.

REFERENCES

Adhikari, A.; Pradhan, K.; Chauhan, J.K. and Reddy, S.K. (2021) Analysing the Perceived Impact of Farmers' Producer Organization (FPOS) on sustainable economic development. *Indian Res. J. Ext. Edu.,* 21 (2&3): 80 – 82

Bamne, L.L.; Badodiya , S. K. and Bihare , G. (2023). Impact of Krishi Vigyn Kendra in changing the annual income of the farmers in Barwani district of Madhya Pradesh, India. *Asian J. Agril. Ext. Eco. & Soci*., **41**(6):41–46.

Bharath, M.; Sriram, N.; Devi, M.N.; Padma, S.R. and Selvi, R.G. (2023). Impact of KVK training programme on knowledge and adoption of paddy production technology in Cuddalore district of Tamil Nadu, India. *Asian J. Agril. Ext. Eco. & Soci*., **41**(10): 44–49.

Bhatt, J. and Katole, S. (2017). Impact analysis of activities of Krishi Vigyan Kendra. *Gujrat J. Ext. Edu.,* **28** (2): 267-270.

Bhuvana, N.; Rao, I. and Sontakki, B. (2020). Impact of Krishi Vigyana Kendras (KVKs) on socio-economic status of farmers: A meta-analysis. *Indian J. Ext. Edu*., **55** (4): 1-8.

Devi, M.V.; Singh, R.J.; Chauhan, J. K. and Marbaniang, E. K. (2022). Farmers' resilience to climate change in the North Eastern Hill Region of India. *Indian Res. J. Ext. Edu.,* **22** (5) : 290-294

Dobariya, J. B.; Thesiya, N. M. and Desai, V. K. (2017). Impact of KVK activities in adopted villages of KVK-Dang. *Guj. J. Ext. Edu*., **28** (1): 28-32.

Holkar, V. V.; Ingawale, P.A. and Mohokar, S. D. (2019). Impact of Krishi Vigyan Kendra programme on beneficiaries. *Agri. Update*, **14** (3): 232-234

Jyothi, V. and Venkata Subbaiah, P. (2019). Front line demonstrations on improved management practices in redgram - A cluster approach. *Indian Res. J. Ext. Edu.,* **19** (4):70-74.

Jyothi, V.; Venkata Subbaiah, P. and Vijayabhinandana, B. (2020). Preference ranking of agro advisorymobile messages sent in rice crop to farmers via e-group. *Indian Res. J. Ext. Edu.,* **20** (2&3):12-16

Jyothi, V.; Vijayabhinandana, B. and Venkata Subbaiah, P. (2020). Farmers preparedness for agricultural contingencies in Krishna district of Andhra Pradesh. *The Andhra Agril. J.,* **67**:116-119

Jyothi, V.; Vijayabhinandana, B.; Venkata Subbaiah, P.; Rajasri Mandali. and Raja Reddy, K. (2018). Pocket cards - An innovative low-cost extension methodology in disseminating critical crop interventions to farming community. *Indian Res. J. Ext. Edu.,***18** (1):80-83

Kishor Kumar, N.; Jyothi, V.; Vijayabhinandana, B. and Murthy, V.R.K. (2019). A study on the impact of ANGRAU supported reliance foundation information services on beneficiary farmers. *The Andhra Agri. J.,* **66** (3): 560-563

Sandhu, K. and Chauhan, J.K. (2020). Vocal for local through Krishi Vigyan Kendras. *Indian Res. J. Ext. Edu.,* **20** (4) : 68-72

Shobhana and Shilpi, V. (2013). Impact of KVK on knowledge level of farm women. *The J. Rural and Agril.Res.*, **13**(2):87-89

Venkata Subbaiah, P. and Jyothi, V. (2019). Impact of frontline demonstrations on improved management practices in groundnut and sesamum. *J. Oilseed Res.,* **36** (3):184-188

Venkata Subbaiah, P. and Jyothi, V. (2020). Effect of improved management practices on yield and economics of *rabi* pulse crops. *Agril. Sci. Digest*. **40** (2):129-133

Venkata Subbaiah, P.; Jyothi, V. and Rajasri, M. (2020). Cluster frontline demonstrations in summer sesamum-impact on livelihood outcome. *J. Oilseeds Res.,* **37** (4):316-318

Venkata Subbaiah, P.; Jyothi, V. and Vijayabhinandana, B. (2020). Perception and acceptability of rice straw baler for on farm residue management. *Indian Res. J. Ext. Edu.,* **20** (1):27-30

Vijayabhinandana, B.; Jyothi, V. and Venkata Subbaiah, P. (2018). Enhancing the role of tenant farmers in achieving nutrition sensitive agriculture. *Indian Res. J. Ext. Edu.,* **18** (1):15-21

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