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PROFILE, KNOWLEDGE AND ADOPTION OF CRITICAL INTERVENTIONS OF MAJOR CROPS AMONG DRYLAND FARMERS IN PRAKASAM DISTRICT OF ANDHRA PRADESH

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ABSTRACT

The current study was conducted to examine the profile, knowledge, and adoption of key interventions among dryland farmers in the Prakasam district of Andhra Pradesh in 2021.An *ex-post facto* research design was used for the study, and a sample of 120 dryland farmers was selected.The results revealed that most farmers were middle-aged (43.33%) or older (45%), with 31.67% being illiterate or having only primary or high school education. Small-scale farmers (56.66%) dominated, and land holdings had decreased due to family divisions. While a majority of farmers had medium (63.33%) to high (19.17%) farming experience, yields in redgram were low (37.5%) and medium in cotton (71.67%), primarily due to climatic challenges and limited irrigation. The majority (55%) had medium annual incomes, supplemented by livestock. Extension contact, media exposure, and information-seeking behaviors were generally medium, with farmers depending on local sources for advice, especially during droughts. Knowledge levels on farming interventions were predominantly medium to high, with 60% of farmers showing medium knowledge on redgram and 68.33% on cotton. Adoption rates were also moderate, with 63.33% adopting redgram interventions and 70% adopting cotton interventions to a medium extent. A significant correlation was found between farmers' knowledge and adoption levels, with education playing a key role in both. Moreover, the study revealed a strong positive correlation between education and the adoption of improved farming practices for both crops. Key variables such as land holding, annual income, extension contact, and irrigation status were positively correlated with knowledge and adoption, while age and farming experience had negative correlations. The study emphasizes the need for targeted agricultural policies, enhanced extension services, and improved irrigation infrastructure to improve productivity and prevent rural-to-urban migration.

Keywords: Credit orientation, Dryland, Information seeking behaviour, Risk preference.

INTRODUCTION

According to the FAO (2000), drylands are defined as areas with a length of growing period (LGP) between 1 and 179 days, encompassing regions that are climatically categorized as arid, semi-arid, and dry sub-humid. Based on the FAO's Global Agro-Ecological Zones (GAEZ) modelling system (FAO, 2020), drylands accounted for 43.20% of the world's total area in 2020, with

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projections indicating an increase to 44.20% by 2050. Rainfed agro-ecosystems play a significant role in Indian agriculture, spanning 80 million hectares across arid, semi-arid, and sub-humid climatic zones, and making up around 57% of the net cultivated land. These areas support 40% of the human population and 60% of the livestock population. Approximately 70% of the rural population resides in rainfed regions, with their livelihoods closely tied to the success or failure of crops (Rao *et al*., 2016). Climate change can amplify existing conflicts by putting additional strain on already vulnerable ecosystems and communities, pushing them beyond their ability to cope. This often leads to heightened tensions over access to and use of natural resources (IPCC, 2019). The productivity of rainfed agriculture remains low due to a combination of biophysical challenges and socio-economic factors (Rao *et al*., 2016).The adoption of moisture conservation technologies by farmers could enhance dryland crop yields, increase farm income, and improve livelihoods. Moreover, utilizing every bit of rainfed land through the implementation of highly efficient technologies is crucial to meet the demands of the growing global population (Kaur *et al*., 2022).

The Commission on Inclusive and Sustainable Agricultural Development of Andhra Pradesh (2016) report reveals that, of the 645 non-urban mandals in the state, 129 are classified as severely resource-deprived. These mandals are mainly concentrated in Anantapuramu (51), Kurnool (30), Kadapa (24), and Prakasam (18). Notably, 64.30% of these resource-deprived mandals are located in the Rayalaseema and Prakasam district. Prakasam is considered highly vulnerable to climate change due to the increasing frequency of droughts and erratic monsoons. With more than 60% of the area relying on rainfed farming, sustaining livelihoods in the district is a significant challenge (NABARD, 2021). Additionally, Prakasam has the largest dryland area among the coastal districts of Andhra Pradesh. This situation calls for a study to assess the socio-economic status, knowledge, and adoption rates of dryland farmers in the district. The study aims to explore their understanding and application of improved rainfed practices, which are crucial for their livelihoods. Based on the findings, recommendations will be provided to enhance their knowledge and promote greater adoption of these practices.

MATERIAL AND METHODS

The study was carried out in Prakasam district, Andhra Pradesh, in 2021, using an *Ex-post facto* research design. Four mandals within the district were chosen, and two villages from each mandal were randomly selected *viz*., Annampalli and Racherla from Racherla mandal, Sanjeevarayunipeta and Kommunuru from Giddalurmandal, Konapalli and Singarapalli from Bestavaripeta mandal, and Darimadugu and Bodapadu from Markapur mandal. Fifteen farmers were randomly selected from each of the chosen villages using a simple random sampling method, resulting in a total of 120 farmers.The assessment of farmer's knowledge used a standardized test with measures like difficulty index, discrimination index, and point-biserial correlation. Responses were scored binary, with 1 for correct answers and 0 for incorrect answers. The maximum possible score for redgram knowledge was 28, and for cotton, it was 35. The scoring pattern for the adoption of critical interventions in cotton and redgram was based on a binary system, where farmers were scored 1 for adopting a particular practice and 0 for non-adoption. The scores for each item were calculated by adding the weights of the items for both knowledge and adoption. Using the resulting scores, farmers were classified into three categories based on the mean and standard deviation. Critical interventions included off-season tillage, improved high-yielding and drought-tolerant varieties, soil moisture conservation practices like ridges and furrows, green manuring, intercropping, and integrated pest management. Adoption of water-saving technologies like micro-irrigation, along with timely sowing, recommended seed rates, spacing, and nutrient management practices, were also assessed. These interventions aim to optimize crop yield, reduce water usage, and mitigate the adverse effects of drought, pests, and poor soil conditions.The Primary data were collected using a pre-tested interview schedule, and statistical methods such as the arithmetic mean, standard deviation, frequencies, percentages, and chi-square test, Phi, Cramer's V, Spearman rank correlation and Pearson correlation coefficient were employed for analysis. Cramer's V was used to assess the strength of association between categorical variables, providing insight into the strength of the relationship.Spearman's rank correlation was used to measure the strength and direction of the relationship between ordinal variables. The Pearson correlation coefficient was employed to evaluate the linear relationship between continuous variables, thereby quantifying the strength and direction of these relationships.

RESULTS AND DISCUSSION

Profile Analysis

The dryland farmers were categorized into different groups based on their profiles, and the results are shown in Table 1.

Most farmers were older (45%) or middle-aged (43.33%), actively engaged in farming. Younger farmers (11.67%), despite their education, were hesitant to farm due to low profitability and frequent droughts, seeking jobs elsewhere. About 31.67 per cent of farmers were illiterate. High school (25%) and primary school (15%) were the next most common educational levels. Graduates (11.67%) often chose farming due to limited job opportunities.The majority were small farmers (56.66%), followed by medium-sized farmers (25%). Land holdings have declined due to family divisions.Most farmers had medium (63.33%) or high (19.17%) farming experience levels, entering farming young due to limited educational opportunities.Over one-third (37.50%) experienced low yields in redgram, and 71.67 per cent achieved medium yields in cotton. Climatic challenges and limited irrigation contributed to these results.Most belonged to medium annual income groups (55%), with diversification into activities like goat rearing and dairy supplementing income.

Nearly two-thirds (65%) had medium extension contact, relying heavily on Agricultural Extension Officers and input dealers for information.Medium exposure (70%) was common, with farmers using electronic media for agricultural information.Nearly two-thirds (65%) exhibited medium information-seeking behavior, relying on local sources due to recurring droughts and crop failures.The majority (60%) had medium levels of social participation, often engaging in farmer interest groups and Vyavasaya Sanghalu for collective benefits. Over three-fourths (76.67%) had medium credit orientation, often accessing loans from banks or cooperatives. Most of the respondents (63.33%) exhibited medium risk preference, reflecting the inherent risks of dryland farming.Over three-fourths (78.33%) had poor irrigation status, highlighting the need for community-based awareness campaigns on farm pond construction.Over half (58.33%) of them had medium economic orientation, prioritizing minimizing crop losses over profit maximization. Half (50%) had medium decision-making ability, often relying on peers due to

Table1.Distribution of dryland farmers according to their profile (n=120)

S.No.	Independent variables	Category	Respondents	
			Frequency	Percentage
1.	Age	Young age (35 and below)	14	11.67
		Middle age (36 to 55 years)	52	43.33
		Old age (56 years and above)	54	45.00
2.	Education	Illiterate	38	31.67
		Can read and write only	0	0.00
		Primary school	18	15.00
		Middle school	10	8.33
		High School	30	25.00
		Intermediate	10	8.33
		Graduate & above	14	11.67
3.	Land holding	Marginal farmers	08	6.67
		Small farmers	68	56.66
		Medium farmers	30	25.00
		Semi-medium farmers	06	5.00
		Large farmers	08	6.67
4.	Experience in	Low (< 17.69)	21	17.50
	dryland farming	Medium (17.69-46.24)	76	63.33
	$\bar{X}$= 31.97 ó = 14.28	High (>46.25)	23	19.17
5.	Yield Redgram	Low (< 2.032)	45	37.50
	$\bar{X}$= 2.97	Medium (2.032-3.908)	43	35.83
	ó = 0.938	High (>3.908)	32	26.67
	Cotton	Low (< 2.814)	20	16.67
	$\bar{X}$= 4.08	Medium (2.814-5.346)	86	71.67
	ó = 1.266	High (>5.346)	14	11.66
6.	Annual income	Low (< Rs.50000)	20	16.66
		Medium (Rs.50000-100000)	66	55.00
		High (>Rs.100000)	34	28.34
7.	Extension contact	Low (< 8.29)	22	18.33
	$\bar{X}$= 12.18 ó = 3.89	Medium (8.29-16.07)	78	65.00
		High (>16.07)	20	16.67
8.	Mass media	Low (< 0.81)	14	11.67
	exposure	Medium (0.81-6.41)	84	70.00
	$\bar{X}$=3.61 ó =2.80	High (>6.41)	22	18.33

S.No.	Independent variables	Category	Respondents	
			Frequency	Percentage
9.	Information seeking	Low (< 3.40)	22	18.33
	behaviour	Medium (3.40-9.30)	78	65.00
	$\bar{X}$=6.35 ó =2.95	High (>9.30)	20	16.67
10.	Social participation	Low (< 0.27)	18	15.00
	$\bar{X}$=1.07 ó =0.80	Medium (0.27-1.87)	72	60.00
		High (>1.87)	30	25.00
11.	Credit orientation	Low (< 1.82)	8	6.67
	$\bar{X}$=3.28 ó =1.46	Medium (1.82-4.74)	92	76.67
		High (>4.74)	20	16.66
12.	Risk preference	Low (< 14.01)	24	20.00
	$\bar{X}$=17.61ó =3.60	Medium (14.01-21.21)	76	63.33
		High (>21.21)	20	16.67
13.	Irrigation status	Poor (< 6.37)	94	78.33
	$\bar{X}$=8.01 ó =1.64	Fair (6.37-9.65)	24	20.00
		Good (>9.65)	2	1.67
14.	Economic	Low (< 14.11)	26	21.67
	orientation	Medium (14.11-22.79)	70	58.33
	$\bar{X}$=18.45 ó =4.34	High (>22.79)	24	20.00
15.	Decision making	Low (< 14.05)	32	26.67
	ability $\bar{X}$=20.30	Medium (14.05-26.55)	60	50.00
	ó =6.25	High (>26.55)	28	23.33
16.	Cropping pattern	Poor(< 2.40)	60	50.00
	$\bar{X}$ =3.31 ó =0.91	Fair (2.40-4.22)	46	38.33
		Good (>4.22)	14	11.67

challenges like dry spells.Half (50%) had poor cropping patterns, with limited irrigation affecting their choices. These findings align with the previous studies conducted by Naik *et al.* (2015), Bankey *et al.* (2012), Praveenbabu (2014), Siddeswari (2015), and Devi (2019).

Level of Knowledge of Dryland Farmers on Critical Interventions in Redgram and Cotton

Table 2 illustrates the distribution of respondents based on their level of knowledge regarding critical interventions in redgram and cotton. The data revealed that the majority (60.00% for redgram and 68.33% for cotton)

Table 2. Distribution of Dryland Farmers Based on Their Knowledge Level of Critical Interventions in Redgram and Cotton (n=120)

S.No.	Category	Redgram		Cotton		Chi-square value (÷^{2})	Phi (ö)	Cramer's V
		f	%	f	%			
1.	Low	23	19.17	18	15.00	68.403** (0.0001)	.068** 1(0.0001)	0.755** (0.0001)
2.	Medium	72	60.00	82	68.33			
3.	High	25	20.83	20	16.67			
	Total	**120**	**100**	**120**	**100.00**			
	Mean	16.16	18.60					
	S.D.	5.95	6.99					

Values in parentheses represent the significance level (sig.)
** Sig. at 5% level; f: Frequency; %: Percentage

had a medium level of knowledge, followed by those with high (20.83% for redgram and 16.67% for cotton) and low (19.17% for redgram and 15.00% for cotton) levels of knowledge, respectively.

It is clear from the above findings that most of the farmers had medium to high levels of knowledge on critical interventions of redgram and cotton. Many of the farmers in the study area were well experienced in farming and had medium level of extension contact. Moreover, the dryland farmers were often exposed to droughts and experienced crop losses due to which they invariably depend on different information sources for gaining knowledge on critical interventions so as to minimize the crop losses. Hence, many of the farmers had medium to high level of knowledge. Similar findings were reported by Rai and Singh (2010), Tidke *et al*., (2012) and Kumar (2019).

The results indicate a significant association between the category distribution of farmers and the type of crop they cultivate, as evidenced by the Chi-square value of 68.403, which is highly significant (p = 0.0001). This implies that the differences in the distribution of farmers across the Low, Medium, and High categories for Redgram and Cotton are not due to random chance.

Extent of Adoption of Critical Interventions in Redgram and Cotton by Dryland Farmers

Table 3 shows the distribution of respondents based on their extent of adoption of critical interventions in redgram and cotton. The data revealed that the majority (63.33% for redgram and 70.00% for cotton) of dryland farmers adopted the critical interventions to a medium extent, followed by those who adopted to a high extent (21.67% for redgram and 18.33% for cotton) and to a low extent (15.00% for redgram and 11.67% for cotton), respectively.

In the study area, most of the farmers are middle aged and experienced in dryland farming. Apart from this, they were in contact with extension personnel and utilized different information sources for suggestions in agriculture. Further, the cluster demonstrations and on farm demonstrations conducted by KVK scientists also had an impact on adoption of

Table 3. Distribution of Dryland Farmers Based on Their Extent of Adoption of Critical Interventions in Redgram and Cotton (n=120)

S.No.	Category	Redgram		Cotton		Chi-square value (÷^{2})	Phi (ö)	Cramer's V
		f	%	f	%			
1.	Low	18	15.00	14	11.67	27.078** (0.0001)	0.672** (0.0001)	0.475** (0.0001)
2.	Medium	76	63.33	84	70.00			
3.	High	26	21.67	22	18.33			
	Total	**120**	**100**	**120**	**100.00**			
	Mean	14.00	16.81					
	S.D.	5.27	6.19					

Values in parentheses represent the significance level (sig.)
** Sig. at 5% level; f: Frequency; %: Percentage

critical interventions by the farmers. Hence, majority of the farmers adopted the critical interventions to a medium to high extent. Similar findings were reported by Mukundarao *et al.* (2015) and Kumar (2019).

The analysis reveals a significant association between the type of crop (Redgram or Cotton) and the distribution of farmers across different adoption levels. The Chi-square value of 27.078 indicates a highly significant relationship ($p = 0.0001$). The Phi coefficient of 0.672 suggests a strong association, further supported by Cramer's V value of 0.475, indicating a substantial effect size.

Based on the above findings, it is clear that crop-specific interventions are necessary to enhance farmers' adoption of critical practices.The significant relationship between the type of crop and the levels of knowledge and adoption among farmers suggests that tailored approaches will be more effective. For instance, targeted training programs and resources for Redgram and Cotton farmers can address specific challenges and leverage opportunities unique to each crop, thereby improving overall agricultural productivity and sustainability.

The table 4 shows a strong positive correlation between education and both the

Table 4. Spearman's rank correlation between education with their level of knowledge& extent of adoption of critical interventions in redgram and cotton(n=120)

S.No.	Profile	Level of knowledge		Extent of Adoption	
		Spearman's rho (redgram)	Spearman's rho (Cotton)	Spearman's rho (redgram)	Spearman's rho (Cotton)
X_2	Education	0.729** (0.000001)	0.756** (0.000001)	0.654** (0.000001)	0.668** (0.000001)

Values in parentheses represent the significance level (sig.)
** Sig. at 5% level; * Sig. at 1% level

Table 5. Pearson correlation between the profile of dryland farmers with their level of knowledge & extent of adoption of critical interventions in redgram and cotton (n=120)

S.No.	Profile	Level of knowledge		Extent of Adoption	
		'r' value (redgram)	'r' value (Cotton)	'r' value (redgram)	'r' value (Cotton)
X_2	Education	-	-	-	-
X_3	Land holding	0.426**	0.291*	0.319*	0.437**
X_4	Experience indrylandfarming	-0.427**	-0.302*	-0.317*	-0.310*
X_5	Yield	0.558**	0.449**	0.520**	0.621**
X_6	Annual income	0.559**	0.480**	0.549**	0.654**
X_7	Extension contact	0.436**	0.256*	0.573**	0.606**
X_8	Mass media exposure	0.478**	0.456**	0.639**	0.692**
X_9	Information seeking behavior	0.611**	0.514**	0.720**	0.752**
X_{10}	Social participation	0.611**	0.528**	0.773**	0.723**
X_{11}	Credit orientation	0.552**	0.464**	0.532**	0.502**
X_{12}	Risk preference	0.597**	0.450**	0.583**	0.642**
X_{13}	Irrigation Status	0.345**	0.221**	0.266*	0.150
X_{14}	Economic orientation	0.680**	0.611**	0.590**	0.636**
X_{15}	Decision making ability	0.767**	0.688**	0.694**	0.750**
X_{16}	Cropping pattern	0.271*	0.273*	0.197	0158

** Sig. at 5% level; * Sig. at 1% level

level of knowledge and the extent of adoption of cultivation practices for redgram and cotton. For redgram, the correlation with knowledge it's "r" = 0.729, and for cotton, it's "r" = 0.756. Regarding adoption, the correlation it's "r"= 0.654 for redgram and "r" = 0.668 for cotton. These results suggest that higher education levels are linked to increased knowledge and adoption of improved cultivation techniques for these crops. A similar trend was observed in the study by Thiyagarajan (2011).

The variables like age and experience in dryland farming have negative and significant relations with the level of knowledge and extent of adoption in both cotton and redgramat 1 to 5 per cent level of significance. On the other hand, variables such as land holding, yield, annual income, extension contact, mass media exposure, information-seeking behavior, social participation, credit orientation, risk preference, irrigation status, economic orientation, and decision-making ability are positively correlated with both knowledge and adoption for redgram and cotton at 1 to 5 per cent level of significance. However, cropping pattern shows only a weak positive correlation with knowledge and no significant relationship with adoption, suggesting it may slightly increase knowledge without significantly impacting adoption.Similar findings were reported by Thiyagarajan (2011), Dhepe (2014), Meena (2014), Sumit and Rajesh (2017), Kandasamy *et al.,* (2022).

CONCLUSIONS

Since most of the dryland farmers belonged to medium category of selected independent variables it should be necessary to enhance desired socio-economic status of dryland farmers through various research, extension and policy interventions in the study area.Despite possessing a moderate to high level of knowledge regarding critical interventions in dryland farming, the resource-poor nature and diminishing sustainability of these areas compel the next generation of farming families to migrate to urban areas. Consequently, a majority of farmers fall within the middle-aged to elderly demographic. Both pull and push factors contribute to this migration phenomenon, resulting in a notably high migration rate. It is imperative for governments to address this concern by formulating policies aimed at retaining rural populations, as failure to do so poses a significant threat to food security. Governmental policies should prioritize the provision of essential resources to mitigate drought effects, funding research for the development of location-specific, cost-effective micro-irrigation technologies, and enhancing crop insurance mechanisms.

The analysis reveals a strong and significant relationship between the type of crop and the farmers' distribution across different categories. Understanding these patterns can help in designing targeted agricultural policies and support systems for farmers based on the crops they cultivate.

REFERENCES

Bankey, B., Rajesh, K., Kamta, P and Sundarambal, P. 2012. Role performance and knowledge level of tribal women farmers in Meghalaya. Indian Research Journal of Extension Education. 12(1): 60-62.

Commission on inclusive and sustainable agricultural development of Andhra Pradesh. 2016. Revitalizing rainfed agriculture of Andhra Pradesh.

Devi, C.L. 2019. Marketing behaviour of women agripreneurs in Kadapa district of Andhra Pradesh. M.Sc. (Ag.) Thesis. Acharya N.G. Ranga Agricultural University. Guntur, Andhra Pradesh.

Dhepe, A.R. 2014. Knowledge and adoption of improved black gram production practices by the farmers. M.Sc. (Ag.) Thesis. VasantraoNaikMarathwadaKrishiVidyapeeth, Parbhani.

FAO, 2000. Agriculture: towards 2015/30. Technical Interim Report. Economic and Social Dept., FAO, Rome.

FAO, 2020. Towards a global programme on sustainable dryland agriculture. Food and Agriculture Organization of the United Nations, Rome.

IPCC, 2019. Climate Change and Land (special report). Retrieved from (https://www.ipcc.ch/srccl/).

Kandasamy, S. U. L., Singh, P. K. and Swain, D. K. 2022. Determination of Factors Affecting the Adoption of Integrated Farming System in Dryland Areas of Southern India by Using Supervised Learning Techniques. Journal of Asian and African Studies. 59(4): 1211-1230.

Kaur, R., Kumar, S and Jaidka, M. 2022. Increasing crop productivity in dryland/ rainfed areas for achieving the sustainability goal of zero hunger. Indian Farming. 72 (07): 07-10.

Kumar, P.P. 2019. A study on the knowledge and adoption of the recommended production technologies by the redgram growers of Prakasam district of Andhra Pradesh. M.Sc. (Ag.) Thesis. Acharya N.G. Ranga Agricultural University, Guntur, Andhra Pradesh.

Meena, R.K. 2014. Knowledge and adoption of pigeon pea production technology by the farmers. M.Sc. (Ag.) Thesis. VasantraoNaikMarathwadaKrishiVidyapeeth, Parbhani.

Mukundarao, B., Suryamani, M and Ratnakar, R. 2015. A study on extent of adoption of Bt. cotton production technologies by the Bt. cotton growers of Andhra Pradesh. The Andhra Agricultural Journal. 62(1): 211-218.

NABARD, 2021. Potential Linked Credit Plan (Prakasam). National Bank for Agriculture and Rural Development, Andhra Pradesh Regional Office.

Naik, A., Sreenivasulu, M. Rao, I.S. and Devi, K.B.S. 2015. Profile characteristics of organic red gram farmers of dry land areas of Karnataka. The Journal of Research PJTSAU. 43 (3): 36 – 40.

Praveenbabu, R. 2014. A study on knowledge and adoption level of paddy farmers in East Godavari district of Andhra Pradesh. M.Sc. (Ag.) Thesis. Acharya N.G. Ranga Agricultural University, Guntur, Andhra Pradesh.

Rai, D.P and Singh, B. 2010. Extent of knowledge and constraints in cotton production technology in Madhya Pradesh. Indian Research Journal of Extension Education. 10(2): 78-80.

Rao, Ch. S., Gopinath, K.A., Prasad, Y.G., Sikka, A.K and Singh, R. 2016. Climate Resilient Rainfed Agriculture status and strategies. Indian Farming. 66(2): 02–06.

Siddeswari, G.K. 2015. Impact of farmer field schools on the rice farmers in Nellore district of Andhra Pradesh. M.Sc. (Ag.) Thesis. Acharya N.G. Ranga Agricultural University, Hyderabad, India.

Sumit, R.S and Rajesh, D.P. 2017. Association between personal profile and extent of adoption regarding paddy production technology. Gujarat Journal of Extension Education. 28(2): 321-324.

Thiyagarajan, M. 2011. Impact analysis of system rice intensification (SRI) among the paddy farmers of Coimbatore district. M.Sc. (Ag.) Thesis. Tamil Nadu Agricultural University, Coimbatore.

Tidke, G.R., Rathod, M.K and Mandve, R.P. 2012. Knowledge and adoption of farmers about the management of pod borer complex in pigeon pea. International Journal of Extension Education. 8: 71-75.

Chennamadhava, M., Praveena, P.L.R.J., Lakshmi, T., Reddy, P.M. 2025. Profile, Knowledge and Adoption of Critical interventions of major Crops among Dry and Farmers in Prakasam District of Andhra Pradesh. The Journal of Research ANGRAU 53 (1): 123-132