

RESEARCH ARTICLE

ADOPTION OF RECOMMENDED PULSE PRODUCTION PRACTICES BY FARMERS OF ANDHRA PRADESH– BASELINE STUDY UNDER BIOTECH KISAN HUB PROJECT

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Abstract

..... Biotech-KISAN Hub, established at Acharya N.G. Ranga Agricultural University, Guntur, Andhra Pradesh with the major objectives of assessment of the yield gaps in major pulses and groundnut in Scarce rainfall zone i.e., Srikakulum and Visakhapatnam districts and North coastal zone i.e., Ananthapur and Kurnool districts. Conducted base line survey at selected 25 villages in these districts with 60 farmers from each district to assess the potentials of the districts by developing a database in order to exploit resources and develop action plans in cooperation with line departments. The adoption index was found to be medium to low in case of Srikakulam and Visakhapatnam districts and medium to high in case of Ananthpur and Kurnool districts indicating that more focused interventions are required in the North coastal zone when compared to Scarce rainfall zone. The overall Adoption Index indicated that majority of the respondents fell in the medium category (49.00%) followed by High (35.00%) and low category (15.00%) indicating that there is scope to increase adoption of recommended practices. The constraint analysis of the respondents regarding adoption of pulse production practices revealed that the major constraints as perceived by the respondents of the four districts were small farm size, poor income level, lack of knowledge, high cost of inputs, lack of technical skill and poor extension contacts. Hence thrust should be given to these areas prior to any intervention and action plans.

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Introduction:-

With the increasing focus of the Government of India in channeling all developmental programmes to directly impact the livelihoods of small and marginal farmers, the Department of Biotechnology, Ministry of Science and

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Corresponding Author:- Dr. T. Srinivas Address:- Professor (Academic & Education), ANGRAU, Lam, Guntur, Andhra Pradesh, India. Technology conceptualized the KISAN (Krishi Innovation Scientific Application Network) Biotech hub programme in all the Agroclimatic zones of Andhra Pradesh. The project is introduced in Andhra Pradesh as "Establishment of KISAN Biotech hub" with the aim to improve the overall living conditions of small and marginal farmers through better agricultural productivity by introducing scientific interventions and best package of practices.

India is leading importer of pulses. Production of pulse/ legume crops has been stagnant over the years.(Singh *et.al.*, 2015). Biotech-KISAN Hub has been established at Acharya N.G. Ranga Agricultural University, Guntur, Andhra Pradesh with the major objectives of assessment of the yield gaps in major pulses and groundnut grown in Scarce rainfall and North coastal Agroclimatic zones. As part of the project, a base line survey was conducted at selected 25 villages of Srikakulam, Visakhapatnam, Anantapuram and Kurnool districts.

In Andhra Pradesh the main hub is located at University head quarters, Guntur and two sub hubs covering two Agroclimatic zones of the state viz., North coastal zone and Scarce rainfall zone. The implementing partners in the North coastal zone are *Krishi Vigyan Kendra*, Amadalavalasa and *KrishiVigyan Kendra*, Kondempudi for the target pulse crops Urad bean, Moong bean and Rajmash. The implementing partners in the Scarce rainfall zone are *Krishi Vigyan Kendra*, Kalyandurgam and *Krishi Vigyan Kendra*, Banavasi for the target pulse crops Pigeon pea, Chick pea and Groundnut.

As a part of this project a baseline survey was conducted in the target districts to analyse the prevailing situation in the target districts prior to project intervention. The major aim was to assess the potentials of the districts by developing a database in order to exploit resources and develop action plans in cooperation with line departments. The present study was undertaken with the following objectives.

- 1. To assess the adoption of recommended practices of the pulse farmers and
- 2. To analyse the constraints perceived by the farmers in adopting recommended practices.

Methodology:-

Ex-post facto design was followed for the study. The study was conducted in Andhra Pradesh which is one of the states in implementation of Biotech KISAN hub programme. Two districts from each agro climatic zone were purposively chosen. Srikakulam and Visakhapatnam from the North coastal zone, Kurnool and Anathpur from the Scarce rainfall zone. Sixty farmers from each district were randomly selected to obtain baseline information making the total sample size as 240 farmers cultivating the targeted pulse crops in these districts. A pre-tested interview schedule was used to collect data from the respondents. Selected profile characteristics of the respondents' viz. Knowledge, Mass media participation, Innovativeness, Risk orientation, Social participation and Extension contact were considered as independent variables of the study.

The adoption index was assessed based on the scores on all the recommended practices of pulse production as adopted and not adopted and the scores on all practices were summated. The respondents were further categorized into three groups based on their adoption index scores separately for each district as Low, Medium and High.

Further, a constraint analysis was conducted to study the constraints perceived by the farmers in adoption of recommended pulse production technologies. The constraints were grouped as personal, economic and technical constraints. The data were collected using interview schedule and analysed.

Results:-

Adoption of recommended pulse production practices:

It is observed from the table 1 that as per the baseline survey of farmers of Srikakulam district 80.00 percent adoption was found for practices such as sowing time and intercultivation followed by 70 percent for practice recommended chemical usage for management of insect pests and 63.33 percent for improved varieties recommended. Remaining practices showed around 50 percent adoption rate or less.

Visakhapatnam district showed 88.30 percent adoption for practice of recommended chemicals for disease management followed by 85.00 percent for practice of recommended chemical usage for insect pests, 81.60 percent for intercultivation and sowing time, 66.60 percent for improved varieties and 61.60 percent for recommended dose of fertilizers. Remaining practices showed less than 50 percent adoption rate.

In case of Anathapur district there was comparatively high rate of adoption for majority of the practices. Maximum adoption rate was recorded for suitable soils (93.30%) followed by recommended chemical usage for management of insect pests (90.00%), sowing time and intercultivation (86.60%), recommended chemicals for disease management (80.00%), improved varieties, recommended dose of fertilizers and spacing (76.60%), recommended herbicides (73.30%) and sowing methods (70.00%). The practices which showed comparatively less adoption were intercrops (33.60%), seed rate (33.30%) and seed treatment (20.00%).

In case of Kurnool district cent percent adoption was found in case of sowing time and suitable soils followed by spacing and seed rate (96.60%), number of improved varieties and sowing methods (93.30%), intercrops and recommended dose of fertilizers and intercrops (90.00%). Least adoption was recorded with the recommended chemicals for insect pest management and INM practices. The adoption was very low for INM in all the districts where as for IPM low in North coastal districts and above 50 per cent in Scare rainfall districts.

S.	Improved	Districts							
No	Practice	Srikakulam (n=60)		Visak (n=60	Visakhapatnam (n=60)		apur (n=60)	Kurnool (n=60)	
		F	%	F	%	F	%	F	%
1.	Improved varieties	38	63.33	40	66.60	46	76.60	56	93.30
2.	Sowing time	48	80.00	49	81.60	52	86.60	60	100.00
3.	Suitable soils	31	51.60	33	55.00	38	93.30	60	100.00
4.	Seed treatment	07	11.60	05	8.30	12	20.00	34	56.60
5.	Sowing method	28	46.60	29	48.30	42	70.00	56	93.30
6.	Spacing	26	43.30	28	46.60	46	76.60	58	96.60
7.	Seed rate	31	51.60	32	53.30	20	33.30	58	96.60
8.	Recommended dose of fertilizers	28	46.60	37	61.60	46	76.60	58	90.00
9.	Recommended herbicides	28	46.60	08	13.30	44	73.30	31	51.60
10.	Intercultivation	48	80.00	49	81.60	52	86.60	20	33.60
11.	Intercrops	03	5.00	10	16.60	20	33.60	54	90.00
12.	Recommended Chemicals for management iof insect pests	42	70.00	51	85.00	54	90.00	20	36.60
13.	Recommended Chemicals for Disease management	28	46.60	53	88.30	48	80.00	42	70.00
14.	INM Practices	12	20.00	10	16.60	08	13.30	07	11.60
15.	IPM Practices	12	20.00	10	16.60	38	63.30	32	53.30

Table 1:- Distribution of respondents according to their practice wise adoption of Recommended pulse practices N=240.

S.NO	District	Adoption index	Respondents			
			Frequency	Percentage		
1.	Srikakulam	Low (upto 33.33)	21	35.00		
		Medium (33.34 to 66.66)	34	57.00		
		High (Above 66.66)	05	8.00		
2.	Visakhapatnam	Low (upto 33.33)	27	45.00		
		Medium (33.34 to 66.66)	38	63.00		
		High (Above 66.66)	03	5.00		
3.	Ananthapur	Low (upto 33.33)	09	15.00		
		Medium (33.34 to 66.66)	33	55.00		
		High (Above 66.66)	18	30.00		
4.	Kurnool	Low (upto 33.33)	06	10.00		
		Medium (33.34 to 66.66)	27	45.00		
		High (Above 66.66)	27	45.00		

Table 2:- District-wise distribution of the respondents based on their adoption index.

Table 3:- Distribution of the res	pondents based on Overall Ado	ption of Pulse production	technologies N=240

Category	Overall adoption index				
	Frequency	Percentage			
Low (upto 33.33)	37	15.00			
Medium (33.34 to 66.66)	118	49.00			
High (Above 66.66)	85	35.00			

The findings in table 2 indicate that the adoption index was medium to low in case of Srikakulam and Visakhapatnam districts and Medium to High in case of Ananthpur and Kurnool districts indicating that more focused interventions are required in the North coastal zone when compared to Scarce rainfall zone. The overall adoption index indicated in table 3 showed that majority of the respondents fell in the medium category(49.00%) followed by High (35.00%) and low category (15.00%). Jayakumar and Sundaramari (2014) also established the adoption index was medium (65%) with regard to management characters studied with rice farnmers of Vellore district of Tamilnadu. Wadekar *et al.*, (2017) also reported the adoption index as medium for selected agricultural technologies with Worli tribal rice farmers of Maharastra state. These results clearly shwed that there is wide scope to increase the adoption by way of educating and motivating the farmers along with arrangements for supply of required inputs and also conducting demonstrations and trainings on pulse production technology need to be taken massively by concerned extension and development agencies in these areas.

Constraints perceived by the respondents in adopting recommended pulse production practices:

The constraints perceived by the respondents in adopting the recommended practices are categorized as Personal, Economic and Technical constraints. Table 4 indicated that in Srikakulam district the major personal constraint was Small farm size (85.00%) followed by lack of awareness or education (86.66%). Among the economic constraints top score was given to high cost of inputs (80.00%) followed by poor income level (70.00%). With regard to technical constraints majority have expressed the major constraint to be lack of technical skill (75.00%) followed by poor extension or research contacts (55.00%). (Sardhar,2019)

Regarding Visakhapatnam district, the major personal constraints was lack of awareness or education (81.66%) followed by small farm size (80.00%). Among the economic constraints top score was given to high cost of inputs (85.00%) followed by poor income level (65.00%). With regard to technical constraints majority have expressed the major constraint to be lack of technical skill (76.66%) followed by poor extension or research contacts (75.00%).

The major personal constraints in Ananthpur district was small farm size (65.00%) followed by lack of awareness or education (60.00%). Among the economic constraints top score was given to high cost of inputs (78.33%) followed by poor income level (55.00%). With regard to technical constraints majority have expressed the major constraint to be lack of technical skill (60.00%) followed by poor extension or research contacts (51.66%).

In Kurnool district the major personal constraints was lack of awareness or education (70.00%) followed by small farm size (63.30%). Among the economic constraints top score was given to high cost of inputs (81.66%) followed by poor income level (63.33%). With regard to technical constraints majority have expressed the major constraint to be lack of technical skill (56.66%) followed by poor extension or research contacts (51.66%). Table 4 further indicated that a similar trend was observed regarding the priority of constraints in all the four districts. However, the score was more in the North coastal districts when compared to Scare rainfall districts.

S.No	Constraints	Districts							
		Srikakulam		Visakhapatnam		Ananthapur		Kurnool	
		F	%	F	%	F	%	F	%
	Personal factors								
1	Age	23	38.3	28	46.6	34	56.6	29	48.33
2	Low Education level	47	78.33	42	70.00	26	43.30	31	51.60
3	Small Farm size	52	86.66	48	80.00	39	65.00	38	63.30
4.	Lack of time	08	13.30	05	8.33	4	6.66	3	5.00
5.	Lack of knowledge/awareness	51	85.00	49	81.66	36	60.00	42	70.00
	Economic Factors								
6	Poor income level	42	70.00	39	65.00	33	55.00	38	63.33
7	Availability of family labour	02	3.33	01	1.66	02	3.33	02	3.33
8	High cost of inputs	48	80.00	51	85.00	47	78.33	49	81.66
9	High cost of farm labour	21	35.00	34	56.66	21	35.00	18	30.00
10.	Lack of credit support	18	30.00	24	40.00	33	55.00	30	50.00
	Technical Factors								
11	Unfavorable climatic conditions	22	36.66	27	45.00	24	40.00	18	30.00
12	Unavailability of Labour	11	18.33	15	25.00	8	13.33	4	6.00
13	Unavailability of inputs	32	53.33	38	63.33	28	46.66	27	45.00
14	Lack of technical skill	45	75.00	46	76.66	36	60.00	34	56.66
15	Poor Extension /Research contacts	33	55.00	45	75.00	31	51.66	31	51.66

Table 4:- Distribution of respondents according to constraints faced by them in adoption of Recommended practices.

Conclusion:-

The base line survey of the four districts threw light on the fact that there is tremendous scope for increasing the adoption rate of pulse production technologies in the four districts as the adoption index was found medium. More thrust should be given to North coastal districts where adoption index was comparatively lower than Scarce rainfall districts. The results also indicated that the major constraints were small farm size, lack of knowledge, poor income level, high cost of inputs, lack of technical skill and poor extension contacts. Hence thrust should be given to these areas prior to any intervention and accordingly action plans are to be developed.

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