

RESEARCH ARTICLE

Innovative extension methods lead to spread of agricultural technologies and socio-economic changes – A successful case in Vizianagaram district of Andhra Pradesh

■ Lakshmana Kella, M. Swathi, K. T. Rao and T. Gopi Krishna

SUMMARY

The transfer of useful knowledge on Good agricultural management practices and technologies to the farmers and influencing the policy decisions in India is evident in agricultural Extension and it improved the production of food grains and other agricultural commodities since long time (Sajesh, VK and A Suresh 2016). Number of extension techniques, tools, methods, approaches were used by the extension specialists to achieve this targets. As number of extension methodologies and approaches are available at the desk of an extension agent and a combination of extension methods and Innovative extension approaches are always proven in reaching the farming community. Thus leading to the adoption of the technologies and increasing the farm productivity further to socio economic changes in rural society. In India the state department of agriculture is looking after the job of transfer of technology and during 1974 the ICAR established the KVKs at District level to meet the Extension needs of the Department of agriculture and Farmers. As an innovation, the ANGRAU established the DAATTCs (District Agricultural Advisory and transfer of Technology centre) during 1998 at district head quarters with an objective to test the Minikits and pre released technologies, Diagnosis and immediate solution to the farmers by the Scientists, Capacity building of farmers, rural youth and grass root level Extension functionaries and to work in convergence with line Departments to increase the out reach of Agricultural Technologies.

Key Words : Innovative extension methods, Lead to spread, Agricultural technologies, Socio-economic changes

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The model of DAATTCs is very unique and meeting the needs of the farmers in reaching timely and empowering them with agro advisories through diagnostic visits, farmer-scientist interactions, awareness meetings and other capacity building and extension activities. The face of transfer of Technology was increased by adoption of a combination of extension methods for each technology starting from the minikits testing, evaluation of varieties and technologies, Demonstration of these ICAR and University Technologies in the form of FLDs, Capacity building of farmers and Department of Agriculture, publication of information materials and distribution to the farmers, popularization of these technologies to reach more number of farmers by mass media like press notes, Popular articles, radio and TV Shows and adoption of innovative Extension approaches in convergence with the line departments to scale up the adoption of the practices which ultimately leads to the socio-economic changes in rural infrastructure.

MATERIAL AND METHODS

The four major crops *viz.*, paddy, maize, blackgram and green gram were selected and a few technologies in each crop which were identified as critical

interventions were selected and the details of the selected technologies were presented in Table A. A combination of extension methods for each technology were used which lead to the spread of technologies in the district and further increase of production and productivity in respective crops leading to socio-economic changes in the rural society. The combination of extension methods were selected based on the requirement of the particular technology and its need to spread in the district. The combination of extension methods starting from minikits testing, evaluation and demonstrations, capacity building, farmer-scientist interactions, interaction of scientist and line department officers, AKPS and whats app messages, telephone calls, TV Shows, Radio Programme, convergence programme with department of agriculture and NGOs etc., were implemented in the district.

Sample and sampling procedure :

The impact of these demonstrated technologies was studied with a sample of 60 farmers from 10 randomly selected villages of 10 mandals of Vizianagaram district by using simple random sampling method. The study includes the personal and socio-economic profile of the farmers, extent of adoption of these technologies and the spread of information among the farming community

Table A : The details of the major crops selected and the critical interventions/ technologies identified in each crop and set of extension methods used to upscale the technologies		
Crop	Technology	Extension programme organized by DAATTC
Paddy	Drum seeder paddy	OFTs, FLDs, Cluster FLDs with funds of ATMA and Capacity building
	Sowing with seed drill	OFTs, FLDs, Cluster FLDs with funds of ATMA and Capacity building
	Variety MTU-1121	OFTs during 2017-18 FLDs since 2018-19 and recommendation through interaction, text and Voice SMS and Mass media
	MTU-1153 and MTU-1156	OFTs in direct sowing in rainfed uplands and Capacity building programme
	MTU-1061	FLD in saline and submerged soils and Capacity building
	Use of liquid bio fertilizers in paddy	FLDs, Capacity building programme, Text and Voice messages and Mass media
Maize	Zero tillage cultivation	OFTs during 2017-18 FLDs since 2018-19 on zero tillage tractor drawn marker and post emergence herbicide and recommendation through interaction and Mass media
	Fall army worm management in maize	OFTs in both the seasons, popularization through various media and capacity building to Department of agriculture, Farmer- scientist interaction programme, other extension activities organized immediately after observation of incidence of pest during August, 2018
Pulses	ICM technologies	OFTs during 2017-18
	YMV management and foliar sprays	FLDs on <i>Vicia sativa</i> , <i>Casputa</i> weed management, Viral disease management since 2018-19, T& V interaction, Capacity building and Mass media
	TBG-104 in black gram	FLDs from 2018-19 on the variety and recommendation through interaction and Mass media, seed exchange from farmer to farmer by encouraging among themselves

and economic advantage in terms of saving in cost of cultivation and yield improvement.

The productivity and profitability of the Demonstrated Technologies was calculated using the data of the OFTs and FLDs in the beneficiary farmers and presented in Table 3. The secondary data of the productivities of the major crops in the technology demonstrated villages was collected and the profitability of each crop was calculated and presented in Table 4. The secondary data was also taken from the published sources to know the spread of technologies in the district and the productivity and profitability of these technologies was calculated and presented in Table 5 for the extent of area spread by the technology. The productivity and profitability was also calculated for the entire area of the district based on the secondary data of crop

productivity during 2019-20 compared to the base year 2015-16 for the technologies adopted by the farmers and presented in Table 6.

RESULTS AND DISCUSSION

The profile characteristics indicate that the young group of farmers is seems to low and the positive side is that the extension contact, social participation and exposure to various sources of information is considerably good.

Productivity and profitability of beneficiary farmers:

The productivity and profitability of the technologies was studied after implementation of the methodologies in the district. The productivity and profitability were increased due to the promotion of agricultural technologies

Table 1: The profile characteristics of farmers under study				(n=60)	
Sr. No.	Profile characteristics	Category	Frequency	Percentage	
1.	Age	Young	5	8.33	
		Middle age	22	38.33	
		Old	33	55.00	
2.	Educational status	Illiterate	28	46.67	
		Primary education	12	20.00	
		Secondary education	5	8.33	
		Higher education	15	25.00	
3.	Occupational status	Single	40	66.67	
		More than one	20	33.33	
4.	Farming experience	Low	5	8.33	
		Medium	15	25.00	
		High	40	66.67	
5.	Farm size	Small	36	60	
		Medium	20	33.33	
		Big	04	6.67	
6.	Annual income	Low	40	66.67	
		Medium	5	8.33	
		High	15	25.00	
7.	Source of information	Single source	23	38.33	
		Two sources	17	28.33	
		More than two sources	20	33.33	
8.	Family size	Small	45	75.00	
		Big	15	25.00	
9.	Social participation	No participation	47	78.33	
		Participation	13	21.67	
10.	Extension contact	Low	22	36.67	
		Medium	18	30.0	
		High	20	33.33	

Table 2 : Productivity and profitability of beneficiary farmers

Sr. No.	Name of the technology	No. of beneficiaries	Normal yield (Kg/ha)	Yield due to adoption of technology (Kg/ha)	Profitability (Rs./ha)
1.	Drum seeder technology in paddy	350	5000	6200	21,780
2.	MSRI in paddy	200	5000	6540	27,951
3.	Variety MTU-1121	25	5250	5360	5731
4.	MTU-1061	25	5870	6870	22,300
5.	Usage of liquid bio fertilizers and bio pesticides in paddy	150	5000	5450	8,167
6.	Zero tillage maize	650	6150	7250	19,360
7.	Recommendations on FAW management	625	6150	6975	14,520
8.	ICM technologies	24	510	725	6550
9.	YMV management in blackgram	18	507	627	4914
10.	TBG-104 in black gram	24	527	663	6690
11.	Weed management in black gram	21	487	608	2890

* The profitability was calculated based on MSP during 2019-20 for paddy and maize (Rs. 1815/q and 1760/q, respectively)

Table 3 : The crop wise productivity data from 2015 -16 to 2019-20 was presented below

Sr. No.	Crop	Productivity (Kg/ha)					% increase of current year over base year	Profitability (Rs./ha) for 2019-20 over 2015-16
		2015-16	2016-17	2017-18	2018-19	2019-20		
1.	Paddy	4425	4672	4467	3532	4886	10.40	8355
2.	Maize	5318	5590	5271	5125	6921	30.15	28214
3.	Greengram	524	488	417	496	695	32.74	12088
4.	Blackgram	579	476	560	594	664	14.64	4835

* The profitability was calculated based on MSP during 2019-20 over base year 2015-16 for respective crops

Table 4 : Spread of varieties / Technologies due to DAATTC interventions

Crop	Technology	Extension programme organized by DAATTC	Area of spread (ha)	Per ha economic advantage (Rs.)	Economic impact (Rs. Lakh)
Paddy	Drum seeder paddy	OFTs, FLDs, Cluster FLDs with funds of ATMA and capacity building	2358	8400	198.07
	Sowing with seed drill	OFTs, FLDs, Cluster FLDs with funds of ATMA and capacity building	1500	3000	45.00
	Variety MTU-1121	OFTs during 2017-18 FLDs since 2018-19 and recommendation through interaction, text and Voice SMS and Mass media	73,000 (60% district area)	3490	2547.7
	MTU-1061	FLD in saline and submerged soils and Capacity building	2100	1200	25.20
Maize	Zero tillage cultivation	OFTs during 2017-18 FLDs since 2018-19 on zero tillage tractor drawn marker and post emergence herbicide and recommendation through interaction and Mass media	3600	4520	162.72
	Fall army worm management in Maize	OFTs in both the seasons, popularization through various media and capacity building to Department of agriculture, Farmer-scientist interaction programme, other extension activities organized immediately after observation of incidence of pest during August, 2018	7000	3230	226.1
Pulses	ICM Technologies	OFTs during 2017-18	4500	5732	257.94
	YMV management and Foliar sprays	FLDs on Cascuta weed management, Viral disease management since 2018-19, T& V interaction, Capacity building and Mass media			
	TBG-104 in black gram	FLDs from 2018-19 on the variety and recommendation through interaction and Mass media, seed exchange from farmer to farmer by encouraging among themselves	2300	1600	36.80
Total					3499.53

Table 5 : Spread of varieties / Technologies due to DAATTC interventions

Crop	Technology	Extension programme organized by DAATTC	Area of spread (ha)	Per ha economic advantage (Rs.)	Economic impact (Rs. Lakh)
Paddy	Drum seeder paddy	OFTs, FLDs, Cluster FLDs with funds of ATMA and capacity building	2358	8400	198.07
	Sowing with seed drill	OFTs, FLDs, Cluster FLDs with funds of ATMA and capacity building	1500	3000	45.00
	Variety MTU-1121	OFTs during 2017-18 FLDs since 2018-19 and recommendation through interaction, text and Voice SMS and Mass media	73,000 (60% district area)	3490	2547.7
	MTU-1061	FLD in saline and submerged soils and Capacity building	2100	1200	25.20
Maize	Zero tillage cultivation	OFTs during 2017-18 FLDs since 2018-19 on zero tillage tractor drawn marker and post emergence herbicide and recommendation through interaction and Mass media	3600	4520	162.72
	Fall army worm management in Maize	OFTs in both the seasons, popularization through various media and capacity building to Department of agriculture, Farmer- scientist interaction programme, other extension activities organized immediately after observation of incidence of pest during August, 2018	7000	3230	226.1
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	TBG-104 in black gram	FLDs from 2018-19 on the variety and recommendation through interaction and Mass media, seed exchange from farmer to farmer by encouraging among themselves	2300	1600	36.80
Total					3499.53

among farming community by the scientists of DAATTC centre in convergence with the Extension staff of Dept. of Agriculture. It was studied by sample survey and the secondary data from the Department of agriculture and planning and monitoring Department.

The data is based on the Extension studies conducted in the DAATTC villages after interventions of DAATTC as FLDs, capacity building and other Extension activities. The results from the above table indicates that a couple of suitable and tailor made extension methods with focus on technology and methodology can able to improve the crop productivity and profitability rather than single method.

Spread of Varieties / Technologies due to DAATTC Interventions :

The DAATTC, Vizianagaram has initiated and

organized OFTs, FLDs and capacity building programme to farmers and officers of Department of agriculture on various technologies which lead to the spread of technologies in the district.

The results from the table indicate that, a combination of extensions methods and convergence of efforts of the University, Department of Agriculture and NGOs lead to the spread of the technology in the district with a short span of time.

The data was calculated from the district data from 2015-16 as base year to 2019-20 as the year of study of impact of these technologies. The district average areas, production and productivity as per the department of agriculture, MSPs for the period was taken as per the existing rates at that time. This is as a result of the Extension and research scientists initiative and the efforts of the Department of agriculture, NGOs and line

departments and adoption of the technology by the farmers.

Conclusion :

The DAATTC, Vizianagaram has initiated and organized OFTs, FLDs and capacity building programme to farmers and officers of Department of agriculture and other Extension methods on various technologies which lead to the spread of technologies in the district. The study reveals that a combination of suitable extension methods specifically for each crop technology coupled

with the efforts of the line departments and NGOs lead to the huge economic impact. The monetary benefit to the farmers in increasing the yields, reducing cost of cultivation lead to profitability after the adoption of improved technologies.

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