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Impact of tribal sub plan (TSP) interventions on tribal farmers in Nalgonda district of Telangana state

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Abstract

The present study was conducted to analyze the impact of technologies disseminated by KVK, Kampasagar during the past 6 years i.e., 2018 to 2023 under Tribal Sub Plan (TSP). The study was conducted with 120 tribal farmers randomly selected from twelve villages of three mandals of Nalgonda district, Telangana State. During the study, primary data available at KVK and supplementary data from the farmers was collected. The collected data were analyzed using various statistical tools like Average, Frequency, Percentage, mean, mean score. To create awareness about various technologies to farmers, KVK adopted cognizance, methodological, Farmer to Farmer Extension approach were adopted wherein 985, 412, 560 programmes were organized and disseminated to 4128, 10935, 1474 farmers respectively through different approaches. Impact of different technologies disseminated by KVK revealed that fine grain varieties of the Rice RNR 15048 in *Kharif* season (68.33%), Bold grain Rice variety JGL 24423 in *Rabi* season (85.00%) under varietal dissemination, Drum seeding in paddy (81.67%) under mechanization, Green manuring preceding to Rice crop (72.50%) under ICM, IPM in Rice (74.17%), Mulching and fertigation in Ridge gourd (60.00%) under INM and Backyard poultry to enhance the nutritional security (77.50%) were majorly adopted by the tribal farmers. With the interventions of TSP through focused programmes and introduction of suitable technologies, a perceptible improvement in the crop productivity has been observed. These technologies resulted not only in higher yields, but high net returns and cost benefits indicating the worth of technologies disseminated and also further spread of the technologies.

Keywords: Tribal sub plan, extension approaches, technologies, adoption, impact

Introduction

Agriculture is playing a vital role in our economy at present. It is the primary source of livelihood around 58 per cent of the population in the country. Agriculture is life line of majority of peoples who are fully or partially dependent on agriculture and its allied sector. In India, agriculture and allied sector has remarkable support for economic growth, development and society transformation of the country. India has different types of tribal population reflecting its great ethnic diversity. They are an integral part of Indian social fabric and accounts for 8.2 per cent of total population, which comprises of 4.26 crores tribal men and 4.17 crores tribal women. This accounts for 8.40 per cent men and 8.01 per cent women (Khare and Rajan, 2014) ^[4]. Scheduled tribes who constitute 8.6 per cent of India's population are the oldest ethnic group in the country. They are socio-economically backward, living under harsh physiographic conditions, suffering poverty and deprivation. Living in predominantly rural areas, agriculture and allied activities are their major source of income. Though the tribal areas are endowed with fertile soil,

abundant rainfall and favorable climate, the crop productivity is substantially low because of poor technological uptake (Kamble et. al., 2019) ^[12]. Scheduled Tribe population in Telangana State, accounts for 9.34 per cent of the total population (as per 2011 census). Nalgonda district has 292,951 ST population and majority are Lambadas. There are several technologies available for improvement in crop productivity, but the available technological option does not fulfill its purpose till it reaches and adopted by its ultimate users, the farmers. The level of knowledge about technology determines the level of its adoption. (Nahatkar et al., 2017) ^[8]. These technologies were demonstrated to the farmers for dissemination at large scale to improve the knowledge, adoption and productivity through front line demonstration programme, because farmers like to see how a new idea works and also what effect it can have on increasing their crop production. (Rajan et al., 2020) ^[11]. The present study "Impact of Tribal Sub Plan (TSP) Interventions on Tribal Farmers in Nalgonda District of Telangana State helps to find out the impact of KVK, Kampasagar in Tribal village.

Materials and Methods

Ex-post facto research design has been selected in the present study. Nalgonda district was purposefully selected where the Tribal Sub Plan has been implemented. Three mandals were purposefully selected, two tribal villages from each mandal were selected thus constituting total six villages for the study. From each village 20 beneficiaries were randomly selected, thus total of 120 tribal beneficiaries were selected for the study. Only those respondents have been selected who have got the benefit of Tribal Sub Plan Programme. An interview schedule was prepared in order to collect information, from the respondents under the study, at least a well-constructed pretested interview scheduled will be used as a tool. The collected data were analyzed using various statistical tools like Average, Frequency, Percentage, mean, mean score. These findings are presented in this article. The source of data for this includes both primary and secondary sources. An Interview Schedule was prepared in order to collect the primary data from the respondents under the study. The collected data was confirmed by holding informal interviews with responsible and knowledge of local informants like Village PRI members, key person of officers and leaders.

Results and Discussion

Technology dissemination approaches and impact of technologies under macro level situation

KVK bridges the gap between the technologies developed at the research institutions and its adoption at the field level by the farmers through various approaches. The data depicted in Table 1 indicates that, to create awareness about various technologies to farmers, KVK adopted cognizance approach where in 294 group discussion meetings were conducted covering 4128 farmers. The other methods of cognizance approach were news coverage (512 Nos) and extension literature (124 Nos). Methodological approach is the main stay of KVK to up-scale technologies to farmers. Frontline Demonstrations (32), On-Farm Testing (18), on-campus and off-campus training programs (218) covering 7160 farmers and 32 field days reaching 1216 farmers were conducted. It is interesting to note the horizontal spread of technologies particularly paddy quality seed viz., RNR 15048, BPT 5204, KNM 118 & JGL 24423 (110q) wherein 440 farmers were involved in disseminating to 1149 other farmers. Similarly, vegetable seedlings (95,000) were utilized by 325 farmers and increased the area under vegetable crops to 21.6 ha in the tribal villages (Nagaraju *et al.* 2017) ^[7].

Table 1: Dissemination Approaches Adopted by KVK for implementation of Tribal Sub Plan

Approach	Methods	No/Programs	No. of farmers reached
Cognizance Approach	Focused Group Discussions	294	4128
	Extension literature	124	-
	TV Programmes	28	-
	Radio Programmes	27	-
	NEWS coverage	512	-
Methodological Approach	Frontline Demonstrations conducted	32	505
	On Farm Testing	18	112
	Fields Days conducted	32	1216
	On-Campus training programmes conducted to the farmers	94	2820
	Off-Campus training programmes conducted to the farmers	124	4340
	Method Demonstrations conducted	98	1522
	Skill Development training programmes conducted	14	420
Farmer to Farmer extension	Seed material produced, sold and distributed		
	RNR 15048 (fine grain variety)	100	214
	BPT 5204 (fine grain variety)	120	275
	KNM 118 (bold grain variety)	100	312
	JGL 24423 (bold grain variety)	120	348
	Vegetable seedlings	95,000	325

The impact of any intervention in the technology is measured in terms of the benefits reaped by the farmers, improvement on socio economic condition and nutrition security. The fact depicted in Table 2 reveals the technologies transferred, received by the farmers and their adoption levels revealing the impact of technologies disseminated by KVK.

It was evident from the table that under varietal dissemination farmers adopted cultivation of fine grain rice varieties RNR 15048 (68.33%) followed by BPT 5204 (65.00%) during the *Kharif* season, bold grain Rice variety JGL 24423 (85.00%) followed by KNM 118 (78.33%) in *Rabi* season when compared to the locally available hybrids as these varieties are high yielding, good demand in the market and helped in increased farmers annual income (Nagaraju *et al.* 2017) ^[7].

As a part of mechanization, drum seeding in rice (81.67%), followed by Seed sum ferti drill in groundnut (61.67%) and Machine transplanting in rice (37.50%) were majorly

adopted by the tribal farmers as there is huge demand for labour, timely non availability of labour and high wages lead to adoption the technologies.

Under Integrated Crop Management major practices adopted by the farmers were viz., green manuring preceeding to Rice crop (72.50%) as it helped in improved growth and yield of succeeding rice crop, followed by cultivation of vegetables under pandal system (67.50%) as major vegetable crops cultivated by tribal farmers were ridge gourd, bitter gourd, bottle gourd and Coccinea this technology helped the vegetable growers to obtain quality produce, high yields and ultimately reaping more profits (Murali *et al.* 2020) ^[6]. with cultivation of leafy vegetables for summer season under shade nets (65.83%), pulse crop followed by rice (60.00%) pulse crop like greengram with the help of conservation agriculture practices helped in obtaining maximum yield and profit in rice-fallow areas, thus enhancing the system productivity and profitability. (Behera *et al.* 2014) ^[12].

Under Integrated Pest Management Practices IPM in Rice (74.17%), IPM in cotton (68.33%), Chilli thrips management (63.33%). It can be concluded that the awareness programmes, Training programmes and timely Methods demonstrations about technology through formal crop-specific IPM training provided by the KVK has been found extremely effective in wider adoption of IPM practices (Alka Singh *et al.* 2008)^[1].

Under Integrated Nutrient Management practices fertigation in Ridge gourd (60.00%) Soil test based fertilizer application (56.67%) educational awareness and resource laboratory to test soil samples in nearby location are influential factors in adoption of the technology (Patel G G *et al.* 2017)^[9], Arka Vegetable Special in Okra (53.33%) were majorly adopted by the farmers.

As a part of subsidiary occupation, it was also observed that a good number of tribal farmers practiced Backyard poultry to enhance the nutritional security (77.50%). Backyard poultry is an important livelihood component of rural and tribal folks, providing valuable animal protein sources

through egg and meat besides aids in economic improvement by providing subsidiary income. KVK, Kampasagar has provided the improved backyard poultry variety i.e., Rajasri birds to the tribal women under Tribal Sub Plan (TSP). The involvement of women was more in housing, feeding, watering, healthcare, and breeding which were contributed for increasing the household income of the family. The income was generated from backyard poultry rearing was used for household needs and also to extend the poultry flock production depending upon the felt needs. The participation of tribal women in the backyard poultry rearing is of great importance and played major role in the economic empowerment of tribal women (Vijaya Nirmala *et al.* 2020)^[12]. Sheep rearing was practiced by 74.17 per cent of farmers. Sheep rearing was promoted as a source of income generation and self-employment for the poor and landless households in Tribal villages. It helped in providing a very stable and attractive additional income source for small and marginal farmers without affecting their main occupation (Misra A S *et al.* 2006)^[5].

Table 2: Impact of different technologies disseminated by KVK from 2018 to 2023 (N:120)

S. No.	Name of the technology/skill transferred	Number of adopters (No.)	Percentage of adoption (%)	Number of non-adopters (No.)	Percentage of non-adoption (%)
I.	Varieties dissemination				
	Fine grain varieties of the Rice RNR 15048 in <i>Kharif</i> season	82	68.33	38	31.67
	Fine grain varieties of the Rice BPT 5204 in <i>Kharif</i> season	78	65.00	42	35.00
	Bold grain Rice variety KNM 118 (Kunaram Sannalu) in <i>Rabi</i> season	94	78.33	26	21.67
	Bold grain Rice variety JGL 24423 in <i>Rabi</i> season	102	85.00	18	15.00
	Redgram variety PRG176	77	64.16	43	35.83
II.	Mechanization				
	Drum seeding in paddy	98	81.67	22	18.33
	Machine transplanting in rice	45	37.50	75	62.5
	Seed sum ferti drill in groundnut	74	61.67	46	38.33
III.	Integrated Crop Management Practices				
	Green manuring preceeding to Rice crop	87	72.50	33	27.50
	Popularization of pulse crop followed by rice	72	60.00	48	40.00
	cultivation of leafy vegetables for summer season under shadenet	79	65.83	41	34.17
	Cultivation of vegetables under pandal system.	81	67.50	39	32.50
IV.	Integrated Pest Management Practices				
	IPM in Rice	89	74.17	31	25.83
	Chilli thrips management	76	63.33	44	36.67
	IPM in cotton	82	68.33	38	31.67
V.	Integrated Nutrient Management Practices				
	Mulching and fertigation in Ridge gourd	72	60.00	48	40.00
	Arka Vegetable Special in Okra	64	53.33	56	46.67
	Soil test based fertilizer application	68	56.67	52	43.33
VI.	Additional Income source/Subsidiary occupation				
	Nutritional kitchen garden in Tribal Thanda for enhancing nutritional food security	82	68.33	38	31.67
	Backyard poultry to enhance the nutritional security	93	77.50	27	22.50
	Sheep rearing	89	74.17	31	25.83

It was evident from the table 03 and 04 that, from base year 2016-17 to 2023-24 there was good development in the TSP implemented villages viz., the production of rice has been increased from 25 q to 31 q/acre over a period of time, this is due to use of improved paddy varieties, quality foundation seed, high yielding and constant awareness programmes, Training programme and demonstrations helped the farmers to adopt the technologies and reap high returns. The area under redgram was less and more over

farmers were unable to grow because of high flower drop and severe incidence of pod borer, in order to overcome the problem KVK demonstrated improved redgram varieties PRG 176, WRG 97 and farmers could able increase their production from 4q to 6q/acre and the area under redgram has been increased from 25 acres to 75 acres in TSP implemented villages. Initially, the area under vegetable crops was very less, but after the KVK intervention i.e., through supply of vegetable seedlings and timely educating

the farmers on crop and pest management helped them to cultivate vegetable crops and could able to produce on an average 18.32q /acre. The main important component is to strengthen the tribal farmers through additional income sources, where KVK distributed improved poultry breeds

viz., Rajasree, Kadaknath, Vanaraja and sheep to the tribal farmers. It was observed that there is increase in production among poultry rearing (120%) and sheep rearing (172.7%) when compared to base year.

Table 3: Before the intervention of KVK

Benchmark (Baseline period 2016-17)					
Components	Names	Area/quantity (Acre/No.)	Production (Q/Liter/Kgs)	Gross Income (Rs.)	Net Income (Rs.)
Field Crop 1	Rice	1 acre	25 Q	39,000	29,000
Field crop 2	Redgram	1 acres	4 Q	21,600	13,600
Hort. Crop 1	Nil	0	0	0	0
Livestock 1	Desi chicks	25 No.	62.5 Kg	20,000	15,000
Live stock 2	Sheep	11 No.	242 Kg	1,81,500	1,06,500
Total				2,62,100	1,64,100

Table 4: After the intervention of KVK

Period 2023-24						% increase over base year	
Components	Names	Area/quantity (Acre/No.)	Production (Q/Liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	production	income
Field Crop 1	Rice	1	31 Q	68,200	46,200	24	59.31
Field crop 2	Redgram	1	6 Q	39000	27000	50	98.52
Horticulture crops	Vegetables	1	18.32 Q	115720	44800	100	100
livestock 1	Improved poultry breeds	55 No.	137.5 Kg	57,750	47,750	120	218.33
Livestock 2	Sheep rearing	30 No.	600 Kg	6,60,000	5,10,000	172.7	378.87
Total				9,40,670	6,75,750		

Conclusion

In conclusion, sustained guidance of KVK, Kampasagar helped the beneficiaries adopt scientific farming and obtain good income. Induction and dissemination of various technologies on crop production and animal husbandry activities have impacted on the yield and income of the farmers. The demonstrations conducted with new improved varieties of paddy, redgram were successful in changing farmer's perception and improving knowledge on recommended farming practices which resulted in higher yields. The results clearly established the facts that the adoption of improved technology improves the productivity and profitability. In the vicinity of the KVK, farmers in large number adopt and followed recommended practices under demonstration and got benefited with higher production. (Rajan *et al*, 2019)^[10].

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