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Role of KVKs in Strengthening Livelihood Security of Resource Poor Farm Families of Rural India

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ABSTRACT

KVKs are the ICAR sponsored district level organisations to test and popularise location specific frontier technologies and thereby strengthening the rural agro-economic scenario of rural India. Till the end of 2014, ICAR has established a network of 641 numbers of KVKs in the rural districts of India to cater the latest scientific needs of the farming community which is in the way of erstwhile lab to land programme. An empirical comparison between various development parameters, *i.e.* socio-economic, occupational, technological and environmental innovations by the resource poor farm families of the adopted villages of KVK, Deogarh of Odisha state and its non-adopted villages in this study. It also quantified the gap between adopted and non-adopted villages and observed significant gaps in some important indicators *i.e.* cropping intensity (74.3%), crop diversification (48.7%), coordination among farmers (75.9%), avenues for agro-employment facilities (69%), skill competency (68%) and reduction in migration (78%). In the components of environment protection towards sustainable agriculture, the steps taken by the farmers were found to be inadequate. The author apprehends that the impact of KVK in influencing the majority of farmers in the whole district in terms of adoption of scientific farming practices may not be very effective.

Key words: Environmental, impact of KVK, innovations, socio-economic, technological,

INTRODUCTION

Contribution of agriculture and allied sectors to national gross domestic product (GDP) has reduced from 30 per cent (1990) to about 15 per cent though majority of the rural population (65%) still depends upon them for their livelihood (Sharma and Singh, 2011). The per capita agricultural land availability in India has also reduced from 0.48 ha (1951) to 0.16 ha (2007-08) making the farming community resource poor. The number of marginal farmers has been increasing with 2.4 per cent of compound annual growth rate in the nation. Lack of infrastructure, insufficient resources and failure of transfer of technology from laboratory to farmer's condition are the important factors playing prominent roles in diminishing attraction of the profession. Indian Council of Agriculture and Research (ICAR), is the premier organisation of the nation for research on agriculture and allied sectors in the nation. It has sponsored a number of projects for transfer of frontier technologies to the farmers *viz.* All India Coordinated Project on National Demonstrations (AICPND), Operational Research Project (ORP) and Lab to Land programme (LLP) etc. from time to time (Waman *et al.,* 2011). Krishi Vigyan Kendra (KVK) is one of the ICAR sponsored institution established in rural districts of India since 1974 for transfer of agro-based technologies to farmers, farm women and rural youths to increase production, productivity of the crops and promote self-employment through up gradation of existing knowledge and skill. Till the end of 2014, it has developed a network of about 641 numbers of KVKs for this purpose throughout India. KVK has the objectives to carry out on-farm research trials (OFT) to verify, test, validate and refine location specific technologies developed by National Agricultural Research System (NARS), popularise them which are economically profitable, ecologically sustainable, technically feasible and culturally compatible through frontline demonstrations (FLD), trainings to farmers, farm women and rural youths for self-employment and increase in productivity, aware and update the grass-root level extension agencies on the latest technologies and moreover act as a knowledge resource centre in the latest technologies of agriculture and allied sectors in the district (Patil and Kokate, 2011). It has the mandate to adopt five villages of different agro-ecological situations for 2-3 years and implement various new technologies and programmes of government, liasoning with other rural development agencies to make them models for the district. In the changing scenario, considering the importance of the role played by KVKs in transformation of agri-rural India, the central government

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has been increasing the number of these institutes in the subsequent five year plans (Directory of KVKs, ICAR 2013) (Fig. 1). But very few research oriented studies has yet been undertaken to find out the role played by KVKs in development of the resource poor masses of the most underdeveloped areas of India. Keeping these aspects in view, the present investigation has been conducted to find out the impact of KVK activities upon the small and marginal farmers in strengthening their socio-economic status.

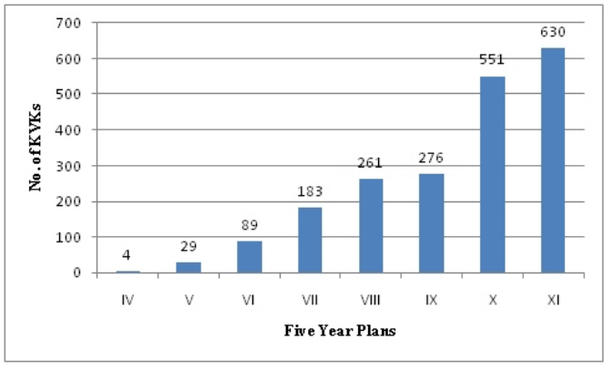

Figure 1. Number of KVKs in different five-year plans

METHODOLOGY

Odisha state was purposively selected for the study as it was one of the most underdeveloped states of India. It has the human development index of 0.362 in comparison to 0.467 of the nation placing it at second lowest position among all the states. Deogarh district of Odisha state was also purposively selected for the study as it has the lowest economic growth among all the 30 districts of the state, *i.e.* 0.15 per cent. Moreover, the contribution of the district to state GDP is merely 0.028 per cent which indicates that most of the farm families are resource poor.

The district has 52 per cent of total geographical area covered by hills, mountains and dense forest. 92 per cent of the total population lives in rural areas and 83 per cent of them are resource poor with less than 2 ha of cultivated land (Nath and Barik, 2011). Besides, it is declared as one of the left wing extremist (LWE) affected districts of India to get special funds for the development. KVK was established in Deogarh district during the year 2006-07. During 2007-08 it had adopted five villages from which two villages namely, Niktimal of Tileibani and Mardang of Barkote block were selected randomly. Two non-adopted villages from the other side of the blocks, *i.e.* Laxmipur and Basalai were selected randomly to avoid the influence of KVK interventions. Thirty resource poor farmers from each of the villages were randomly selected. A semi-structured comprehensive interview schedule was prepared in consultation with all the subject matter specialists of KVK, Deogarh to find out the developments in terms of social development, economic development, occupational development, adoption of technology and environmental development in the adopted villages in comparison to the non-adopted villages. The development parameters were divided into a number of indicators. Information on these indicators was collected from the 120 respondents in the 5-point Likert's scale, i.e. assigning 5,4,3,2,1 score to strongly agree, agree, undecided, disagree, strongly disagree respectively. Mean score of each developmental indicator for each studied village and average score of adopted and non-adopted villages for each indicator were computed. The gap between the indicators of development was calculated using the formula-

$$\text{Gap (\%)} = \frac{\text{Avg. Score of adopted villages - Average score of non-adopted villages}}{\text{Average score of non-adopted villages}} \times 100$$

RESULTS AND DISCUSSION

KVK, Deogarh had organised 78 numbers of on-farm testings, 130 front-line demonstrations for technological development as well as 511 numbers of vocational trainings to increase knowledge level and skill competency of farmers, farm women and rural youths till March, 2012 (Nath, 2013). It was taking up OFTs, FLDs and various vocational trainings in the adopted villages on crops and non crop enterprises which helped in promoting higher crop yield and strengthening socio-economic status of the resource poor farmers. The development of the social sector due to KVK interventions in the adopted villages was compared with the non-adopted villages and the result is mentioned below.

Table 1: Extent of social development

n= 120

Development indicators	Tileibani block		Barkote block		Pooled score		Gap (%)
	Niktimal	Laxmipur	Mardang	Basalai	Adopted villages	Non-adopted villages	
Community approach	3.70	2.10	3.25	2.54	3.48	2.32	50.0
Coordination among farmers	3.82	2.04	3.64	2.20	3.73	2.12	75.9
Group approach	3.26	2.27	3.68	2.80	3.47	2.53	37.2
Crisis management	2.56	1.66	2.34	1.87	2.45	1.76	39.2
Social welfare development	2.88	1.92	2.52	1.38	2.70	1.65	63.6

From Table 1 it is observed that the there was better coordination among the studied farmers in the adopted villages than the non-adopted villages. The gap between both the types of villages was found 75.9 per cent The respondents of the adopted villages were found better crisis managers at the time of need. In the non-adopted villages farmers opined of their non-cohesive attitude in social welfare programmes. Group approach in performing various social activities, though better in KVK adopted villages, but its presence was also felt among the respondents of non-adopted villages.

Table 2: Extent of economic development

n=120

Development indicators	Tileibani block		Barkote block		Pooled score		Gap (%)
	Nikt imal	Laxmi pur	Mardang	Basalai	Adopted villages	Non-adopted villages	
Employment generation	4.34	2.32	4.13	2.71	4.23	2.52	67.9
Savings	4.06	2.1	3.91	2.80	3.98	2.45	62.4
Market creation	3.62	2.04	2.88	2.26	3.25	2.15	51.1
Access to credit	3.56	2.70	2.75	2.14	3.16	2.42	30.6
Asset creation	3.78	2.75	3.72	2.04	3.75	1.90	56.2

It is revealed from the above table 2 that in the KVK adopted villages the employment opportunities for the resource poors were more. Farmers' opinion on the role of KVK in giving the scope of employment was highest among all the other factors in the adopted villages. The gap between the adopted and non-adopted villages was found 67.9 per cent in case of employment generation. In Mardang village there was the least difference in access to credit and market creation. As the village was found nearby the block head quarter, KVK's role in providing credit accessibility found marginalised. The employment avenues available in adopted villages might have led to establish such a large gap of 62.4 per cent in creation of saving atmosphere between both the types of villages.

Table 3: Extent of occupational development

n=120

Development indicators	Tileibani block		Barkote block		Pooled score		Gap (%)
	Nikti mal	Laxmi pur	Mard ang	Basalai	Adopted villages	Non-adopted villages	
Employment generation through on-farm vocations	4.20	2.42	4.42	2.68	4.31	2.55	69.0
Employment generation through off-farm vocations	3.80	2.18	3.16	2.09	3.48	2.14	62.6
Employment generation through non-farm vocations	1.80	1.68	2.28	1.90	2.04	1.79	14.0
Occupational stability checks migration	3.94	2.22	4.14	2.32	4.04	2.27	78.0
Optimum use of own resources	3.65	2.14	3.74	2.08	3.7	2.11	75.3
Skill competency	4.10	2.62	3.66	2.0	3.88	2.31	68.0

A cursory look into Table 3 reveals that KVK was playing an important role in providing employment in agricultural sector as well as increasing the skill competency of farmers in the adopted villages. The gap between the adopted villages and non-adopted villages was 69 per cent in agro-employment sector only. Similar findings were also observed from the studies of Bar *et al.,* (2011). But in providing employment in non-farm sector the role of KVK was found minimum as the gap was calculated only 14.0 per cent. In adopted villages, the farmers were observed having better knowledge on optimum use of own resources. The higher gap (75.3%) between both types of villages indicates that the resource poor farm families in the adopted villages were more aware in efficient use of their own available resources than the non-adopted villages. The KVK interventions had an important role in limiting migration of the small and marginal farmers of its adopted villages in search of employment opportunities. The result supports the findings of Singh *et al.,* (2010). From Table 3 it could also be concluded that KVK, Deogarh was also playing a major role in providing off-farm employment to farm families in secondary agriculture, value addition *etc.*

Table 4: Development of technology adoption

n=120

Development indicators	Tileibani block		Barkote block		Pooled score		Gap (%)
	Nikt imal	Laxmi pur	Mard ang	Basalai	Adopted villages	Non-adopted villages	
Crop diversification	4.11	2.6	3.96	2.82	4.03	2.71	48.7
Use of improved seeds	4.55	2.88	4.10	3.25	4.32	3.06	31.7
Use of chemicals in farming	4.34	2.67	4.06	3.12	4.20	2.89	45.3
Use of farm implements	3.46	2.04	3.08	2.62	3.27	2.33	40.3
Cost reduction in farming	3.66	2.20	3.18	2.22	3.42	2.21	54.8

Storage and preservation techniques	3.40	2.92	3.68	3.06	3.54	2.99	18.4
Producing qualitative items	3.98	2.36	3.72	2.80	3.85	2.58	49.2
Use of eco - friendly techniques	3.62	1.98	3.40	2.46	3.51	2.22	58.1
Adoption of suitable farming system	3.88	2.65	4.0	2.67	3.94	2.66	48.1
Increase in cropping intensity	4.36	2.24	4.19	2.66	4.27	2.45	74.3

From Table 4 it could be understood that technological adoption of recent innovations in adopted villages of KVK was more than the non-adopted villages. In case of use of improved seeds in cultivation, in non-adopted villages, it had better mean score (3.06) than any other technologies which indicated the increasing awareness and confidence of people on the role of improved seeds in enhancing productivity. In adopted villages, use of improved seeds to increase the cropping intensity and chemical fertilisers and pesticides in farming were found accepted by most of the studied farmers. Use of farm implements was not satisfactorily improved even in the adopted villages. During the survey, these farmers opined the higher cost and unsuitability of implements to their farming situation were the main causes for non-adoption. It was observed that in adopted villages, the small and marginal farmers followed multiple cropping whereas in non-adopted villages most of the land remained fallow after the main crop. About 74.3 per cent of gap in technology adoption leading to change in cropping intensity was observed between adopted and non-adopted villages. There was minimum gap (18.4%) in adoption of storage and preservation techniques of produce between adopted and non-adopted villages. It was found that most of the families were following the traditional storage techniques.

Table 5: Extent of environmental development

n=120

Development indicators	Tileibani block		Barkote block		Pooled score		Gap (%)
	Niktimal	Laxmipur	Mardang	Basalai	Adopted villages	Non-adopted villages	
Conservation of natural resources	3.82	2.94	3.02	2.82	3.42	2.88	18.7
Maintaining water sources	3.24	2.86	3.71	3.08	3.48	2.97	17.2
Soil and water conservation	2.88	2.64	3.14	2.62	3.01	2.63	14.4
Organic farming with bio-inputs	3.35	2.0	3.10	2.74	3.23	2.37	36.3
Plantation in degraded lands and pasture development	4.12	2.76	3.24	2.66	3.68	2.71	35.8

Table 5 indicated that in environment protection and providing the means to sustainable agriculture, KVK was playing a crucial role in the adopted villages. Though among all the developmental aspects, the gap was found minimum, yet it could be concluded that KVK was able to bring awareness among the farmers on these issues. It was found that as marginal and small farmers were not realizing any significant and visible impact of the above mentioned environmental issues on production and productivity of crops, the gaps between adopted and non-adopted villages were found minimum in comparison to other developmental aspects. In plantation programmes and pasture development, the farmers of KVK adopted villages were more conscious (35.8% gap). They also had better knowledge on organic farming using biological inputs than the non-adopted villages. But in soil water conservation, maintaining water sources and conservation of natural resources KVK's role was found limited.

Table 6: Distinctive gaps observed between adopted and non-adopted villages due to KVK interventions

Higher gaps	Gap (%)	Lower gaps	Gap (%)
Occupational stability checks migration	78	Employment generation through non-farm vocations	14.0
Coordination among farmers	75.9	Soil and water conservation	14.4
Optimum use of resources	75.3	Maintaining water sources	17.2
Increase in cropping intensity	74.3	Storage and preservation techniques	18.4
Employment generation through on-farm vocations	69.0	Conservation of natural resources	18.7

There was a distinctive gap found between the adopted and non-adopted villages due to KVK interventions. In providing an occupational stability, KVK's role found pivotal in adopted villages. It checked migration of farm families to other places in search of livelihood. The highest gap of 78 per cent was calculated between both the studied villages. In other parameters like coordination among farmers, optimum use of their available resources, increase in cropping intensity and availability of agro-based employment facilities the adopted village was in much better position than the non-adopted one.

It indicated the role played by KVK activities in establishing the change. But in case of natural resource management the performance of KVK activities in the studied adopted village was not much effective, as observed in Table 6. In adopting safe storage practices the farmers were not much different in both the types of villages.

CONCLUSION

KVKs are the grass-root level organisations for testing of location specific frontier technologies of agriculture in farmers fields and thereby provide self-employment avenues to the resource poor families. It could be observed from the above study that the interventions of KVK was proved instrumental in not only increasing cropping intensity or increasing skill competency of farmers but also was very fruitful in solving the social maladies like unemployment and migration in adopted villages. A dismal performance was observed in the non-adopted villages on these pertinent development indicators. KVKs could serve as real captains of rural transformation if their interventions are spread throughout the length and breadth of the district. In other words KVK may have to make its presence felt, beyond the boundary of the adopted villages. This would necessitate convergence of efforts of several stakeholders engaged in rural development. Various development agencies of Government, non-government organisations and private sector will have to make concerted efforts towards minimising the gaps. Further these adopted villages could be taken as models for the wholesome development of the agro-economic scenario of the whole district.

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