

Efficacy of Partnership Model to Assess and Disseminate IARI Technologies

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Abstract—In wake of ineffective performance of public extension system; the role of VOs in transfer of technology becomes significant. It has also been well established that the effectiveness of extension system can be enhanced by working with VOs in the public-private partnership mode. IARI has been conducting transfer of technology programmes in partnership mode with different VOs spread across several states of the country since last four years. One such programme has been in operation in collaboration with Himalayan Environmental Studies and Conservation Organization (HESCO), Dehradun, Uttarakhand since 2010-11. This partnership project has been implemented with the objective to upscale of IARI technologies and reach out to the thousands of the farmers.

1. INTRODUCTION

Generally technology transfer by the Public sector Agricultural Research Institution to its farming clientele is accomplished through inbuilt extension mechanism. Considering the wide spread farming community, it becomes infeasible for the National Institute with its limited resources, to assess and disseminate the generated technology to the large population of farmers dwelling in different part of the country. Under the situation, the network of voluntary organizations working at the grass root level across the country may be explored as possible alternatives to mobilize and reach out to the farmers. Indian agricultural Research Institute, a premier Institution in Agriculture research has been implementing its transfer of technology programme in public private partnership with selected VOs spread across several states of the country since last four years. IARI, under this programme, is collaborating with Himalayan Environmental Studies and Conservation Organization (HESCO), Dehradun, Uttarakhand since 2010-11. This partnership project has been implemented with the objective to upscale of IARI technologies and reach out to the thousands of the farmers. An effort has been made through the present study to assess the efficacy of this model in terms of increasing farm productivity and profitability of the farmers.

2. METHODOLOGY

Rabi crop technologies were assessed every year from 2010-11. From rabi 2010-11 to 2014-15, demonstrations were laid on improved varieties of different crops on the selected farmers' fields of 4 villages of Taluk/ Tehsil Johnpur, Sahaspur and Raipur in the districts of Dehradun and Tehri Garhwal of Uttarakhand. IARI provided the seeds at the doors of farmers through VOs networking and technical help to the farmers was provided through scientific monitoring.

3. RESULTS

A total of 252 demonstrations were conducted covering an area of 16.33 hectare consisting of 122 demonstrations on wheat crop, 25 on mustard, 62 on pea, 8 on gram, 10 on lentil and 25 on Palak. The results are given in flowing tables:

Table 1: Crop performance, Rabi 2010-11

Crop	Variety	Area (ha.)	Yield of demon' variety (q/ha)	Average Yield (q/ha) under demonstration
Wheat	HS 420	2.80	31.95	31.95
	H.D. 2733	0.40	27.50	27.50
Pea	P. Pragati	0.70	14.95	14.95
Lentil	L-4076	0.80	12.45	12.45

The main purpose of the programme in the starting year was to introduce the improved technologies of IARI and popularize it among the farming community of the area. It is evident from the Table 1, that during rabi 2010-11, interventions of improved wheat varieties, HS 420 and HD 2733; Pea, P. Pragati and Lentil, L 4076 were given through collaborative partner, HESCO, Dehradun. The average yield of demonstration wheat varieties, HS 420 and HD 2733 were 31.95 and 27.50, respectively. The average yield of pea, P. Pragati and lentil, L-4076 were 14.95 and 12.45, respectively. This helped in assessing the IARI improved Varieties of

different crops and creating awareness of the farmers regarding these technologies.

Table 2: Crop performance, Rabi 2011-12

Crop	Variety	Area (Ha.)	No. of dem.	Yield q/ha.	yield local check (q/ha)	Increase in yield %
Wheat	HS 420	1.20	22	55.14	39.32	40.23
Pea	P. Pragati	0.20	5	9.56	7.46	28.15

Economic Impact (continuation of previous table)

Average Net Return (Rs./ha)		Benefit Cost Ratio	
Demo Plots	Local Check	Demo Plots	Local Check
34203	31041	2.07	1.92
22380	11842	2.40	2.12

As shown in the Table 2 technological interventions of improved wheat variety, HS 420 and Pea, P. Pragati were given under the partnership programme. The demonstration on farmers' field showed an increase in the yield of 40.23 and 28.15 per cent, respectively as compared to the old variety. The economic impact shows that the benefit-cost ratio of the interventions of wheat (HS 420) and pea (P Pragati) were 2.07 and 2.40 in comparison to 1.92 and 2.12 respectively. It clearly proves that the interventions of improved technologies resulted in increased productivity and profitability for the farming clientele.

Table 3: Crop performance, Rabi 2012-13

Crop	Variety	Area (ha.)	No. of Demonstrations	Avg.Yield (q/ha)	Av. yield q/ha	(%) Increase
Wheat	HD 2967	0.56	7	48.01	32.68	46.90
Mustard	P-Vijay	0.96	12	20.26	15.26	32.93

Economic Impact (continuation of previous table)

Average Net Return (Profit) (Rs./ha)		Benefit-Cost Ratio	
Demonstration plot	Local Check plot	Demonstration plot	Local Check plot
45900	17780	2.41	1.57
58540	38460	3.60	2.60

During rabi 2012-13, interventions of improved variety of wheat (HD2967) and mustard (P. Vijay) crop were assessed in the farmers field in the partnership mode. As depicted in the Table 3, the demonstration of the crops has resulted in average yield increase of the wheat and mustard variety to the tune of 46.90% and 32.93%, respectively. The Benefit-cost ratio of improved wheat and mustard varieties are 2.41 and 3.60 respectively which is higher than the local check (1.57 and 2.60). The finding indicates that the technological

interventions have proved beneficial in productivity and economic return for the clientele.

Table 3: Crop performance, Rabi 2013-14

Crop	Variety	Area (ha.)	Demo	Average Yield (q/ha)	LocalCheck q/ha	(%) Increase
Wheat	HD-2894	1.72	26	51.44	34.25	50.19
	HD-2851	0.43	7	55.54	34.25	62.16
	HD-2967	1.07	17	50.78	34.25	48.26
Pea	Pusa Pragati	0.51	27	77.31	55.36	39.65
Gram	P-1088	0.51	8	24.08	15.99	50.59
Mustard	Pusa Vijay	0.67	10	22.10	15.24	45.01
	P. Jagannath	0.13	3	23.95	15.24	57.15
Palak (Spinach)	P. Bharati	0.67	25	492.50	354.00	39.12

Economic Impact (continuation of previous table)

Average Gross Return (Rs./ha)		Average Net Return (Profit) (Rs./ha)		Benefit-Cost Ratio	
Demonstration plot	Local Check plot	Demonstration plot	Local Check plot	Demonstration plot	Local Check plot
92583	61650	78083	48650	5.4	3.7
99972	61650	85472	48650	5.9	3.7
91404	61650	76904	48650	5.3	3.7
193275	138400	158275	108400	4.5	3.6
168525	111930	131025	79930	3.5	2.5
77333	53340	59333	38340	3.3	2.6
83825	53340	65825	38340	3.7	2.6
985000	708000	935000	663000	18.7	14.7

During rabi 2013-14 interventions of improved wheat varieties (HD 2894, HD 2851 and HD 2967), Pea (P Pragati), Gram (P 1088), mustard (P. Vijay and P. Jagannath) and palak (P. Bharati) was assessed under the collaborative programme. It is clear from the Table 4 that increase in yield of HD 2894, HD 2851 and HD 2967 over old varieties were 50.19, 62.16 and 48.26 per cent, respectively. Increase in yield level of pea was 39.65 per cent, gram, 50.59, mustard, P. Vijay, 45.01 and P. Jagannath, 57.15 compared to local check. Benefit-cost ratio of the demonstrated varieties of wheat varieties, HD 2894, HD 2851 and HD 2967; Pea, P Pragati; Gram, P 1088; mustard, P. Vijay and P. Jagannath and palak, P. Bharati was 5.4, 5.9, 5.3, 4.5, 3.5, 3.3, 3.7 and 18.7, respectively, showing a higher economic return. This is evident that the new interventions have proved fruitful for the farming community in enhancing income and production of their enterprise.

Table 4: Wheat Crop performance, Rabi 2014-15

Variety	No. of Demonstrations	Area (ha.)	Avg Yield	Av. yield Local q./ha	(%) Increase
HD2967	9	1.50	45.10	29.50	52.88
HD3059	2	0.16	48.30	30.20	59.93

Economic Impact (continuation of previous table)

Average Net Return (Profit) (Rs./ha)		Benefit-Cost Ratio	
Demonstration plot	Local Check plot	Demonstration plot	Local Check plot
60090	32550	3.35	2.29
66170	32880	3.59	2.35

The technological interventions assessed during rabi 2014-15 were improved wheat varieties, HD 2967 and HD 3059. The two varieties recorded an increase in yield of over 52 and 59 per cent, respectively against the local varieties. Whereas, the Benefit cost ratio of the two varieties was 3.35 and 3.59, the corresponding figures for the check were 2.29 and 2.35, respectively. The rabi interventions showed better performance of crops and a favourable economic impact.

The feedback generated from demonstrated plots of the farmers showed the impact of the technology. The average yield increase of improved varieties of wheat has been found to be in range of 27.27% to 62.16% over the local check and the benefit cost ratio ranged from 2.06 to 2.9. In case of mustard crop, an average increase in productivity ranged from 32.93% to 57.15% over the local varieties of the area. The B-C ratio calculated for the crop ranged from 2.6 to 3.6. The pea crop showed an average yield increase over local check in the range of 28.15% to 46.48% and the corresponding B-C ratio ranged from 2.12 to 3.5 due to good marketability of the variety, Pusa Pragati. In general the IARI varieties of different crops proved to be higher yielder and having early maturity than local varieties. Infestation of weed in improved varieties was lesser and they fetched higher return to the farmers.

4. CONCLUSION

This partnership programme is found successful in terms of production, productivity and profitability. New crops and varieties were first time introduced in the area leading to crop diversification. An innovative mechanism of spreading the improved technologies through Kisan banks in 10 blocks is the outcome of this partnership model. It ensures the regular supply of seeds to the farmers and are being maintained by the villagers. At present about 5,700 farmers are the members of these banks. The partnership programme hence proved to be economic and efficient in terms of reaching out to the farmers with improved varieties in shortest possible time.