

IMPACT OF PARTICIPATORY APPROACH IN INCREASING PADDY YIELD OF BAHADURGARH BLOCK OF HARYANA STATE

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ABSTRACT

Agriculture is the way of life of rural people. Green revolution has resulted in achieving food sufficiency with adequate grain reserves. However, green revolution has not benefited irrigated small farms and rain fed farms. The technology application gap still persists in such areas. The reasons being generation of technologies that do not match with the micro-farming situation of the farmers. It is being realized that the participation of such farmers in planning and implementation of technology transfer programmes will result in generation of appropriate technologies and there by improving the adoption. Participatory Rural Appraisal is the technique that helps in interacting with local people, understanding them and learning from them. PRA technique helps in generation of appropriate technologies that fit into the need of spatially and temporally variable farming situations.

Key words : Rainfed Farms, Green Revolution, Small Farms and Benefits.

INTRODUCTION

Despite substantial growth in agricultural production, in general and paddy productivity in particular, the average yields of most of the crops are low and there exists a substantial gap between the actual and potential yield level in Haryana. The average yield of paddy in the Bahadurgarh block is 14.75 q/ha. However, the average yield of different crops in the state like paddy is 22.40, Jowar 2.31, Bajra 10.10, Maize 19.50, Arhar 11.30, Cotton 2.60, Sugar cane 550.40, Wheat 39.20, Barely 27.80, Gram 8.30 and Rapeseed and Mustard 12.30 q/ha respectively (CMIE 2000). The study was undertaken in Bahadurgarh block/Sub division of Jhajjar district of Haryana State. This clearly shows that the village level yields are comparatively low, thus, there is a still scope to enhance the productivity of different crops at village level, which in turn will increase average yield of different crops at block level. Thus, the higher productivity can be achieved through the use of various extension techniques such as **participatory approach** at village level.

In the changing scenario of commercialization and globalization, the past conventional technology transfer approach are proving less effective in transferring appropriate technologies to the farmer's field. In view of this, Indian Council of Agricultural Research (ICAR) has developed a new pragmatic concept, popularly known as technology assessment and refinement through "Institute Village Linkage Programme" (IVLP). The new concept was based on participatory mode ensuring

greater scientists-farmers linkage with a bottom up approach. The farmers were involved right from the beginning in the implementation of this programme. Hence, the paddy technologies were assessed on farmer's fields and refined as per the micro-level agro-ecological condition of area, need of farming community and the market. Keeping this in view the study was conducted with the following objectives :

1. To assess and refine the technological interventions with an emphasis on stability, sustainability alongwith higher productivity and profitability of paddy crops.
2. To facilitate adoption of appropriate production technologies of paddy to increase yield and income of the farmers.

METHODOLOGY

The study was undertaken during the year 2000 in Jhajjar district or Bahadurgarh block / sub division of Haryana State. From this block, three villages namely, Asoda Todran, Asoda Shiwan and Jakhoda were selected for the study. Using the participatory approach, paddy production technologies in the villages were assessed and refined particularly four major production areas namely, different paddy varieties, insect- pests control, use of blue green algae and control of sheath blight disease in paddy crop.

The sample of the study consisted of 80 farmers from the study villages for above technological interventions. Thus, the 80 trials of paddy crop using all four interventions were used alongwith paddy crops

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raised by the farmers in general as a control in villages. The results obtained from the farmers' paddy yields from the area was obtained and interpreted accordingly as given in results and discussion below.

RESULTS AND DISCUSSION

The participatory approach was used and paddy production technologies were assessed in the villages. After assessment of paddy production technology and related major problems, the four technologies were introduced on the randomly selected farmers' fields which are explained one by one as detailed below:

Technological assessment and introduction for refinement of higher yielding variety of Basmati rice-

The participatory approach was used where in farmers were involved for knowing their problems related to paddy production technology. The problems were identified and come to a conclusion that the majority of farmers of these villages were growing local Basmati which were tall and susceptible to lodge which resulted poor yield and low income per hectare.

Thus, the dwarf and high yielding variety of Basmati Rice (PB-1) was introduced and grown on the farmers' fields to enhance their yield and income. The local Basmati was taken as control. Thus, the comparative average yield and income of both the local and Basmati (PB-1) were studied. The yield as well as income per hectare was taken which is given below in table 1.

Table 1. Increase in average yield and income due to high yielding variety of Basmati rice.

Name of villages	Rep.	Treatment	Average yield (q/ha)	% increase in yield	Av. gross income (Rs/ha)	Increase in income (%)
Asoda Todran	5	Control	24.15	---	30988	---
		PB-1	45.52	88.49	50872	64.17
Asoda Shiwan	5	Control	23.67	---	30388	---
		PB-1	47.15	99.19	52665	73.31
Jakhoda	10	Control	18.98	---	24525	---
		PB-1	32.06	68.91	36066	47.06
Total	20	Control	21.45	---	27612	---
		PB-1	39.2	82.75	43920	59.06

Varieties : Local Basmati, PB-1,

Product price : Rs. 1250/q., Rs. 1100/q., Straw Rs. 800/q.

The results in above table indicate that the inter village variation was observed in paddy field of high yielding Basmati rice (PB-1) as well as local Basmati in all the three selected villages. The highest yield and income increase was recorded in Asoda Shiwan village followed by Asoda Todran and Jakhoda village, respectively. However, the overall yield & income

increase was found to the extent of 82.75 and 59.06 percent, respectively and Samra and Mishra also reported similar findings. The result in the above table indicates that the increase in income is highly correlated with the increased average yield per hectare. This implies that the technological intervention has created good impact on farmers in the villages.

Technology assessment and introduction for refinement for disease control in Basmati rice-

The major outcome of' participatory approach used in the villages was the identification of sheath blight disease in paddy in the study area. Therefore, to control the sheath blight disease the Bavistin (fungicide) was used on the farmers' fields as a technological intervention and also taken as a control the other paddy fields of the farmers.

Table 2. Increase in average yield and income due to control measures of sheath blight

Name of villages	Rep.	Treatment	Average yield (q/ha)	% increase in yield	Av. gross income (Rs/ha)	Increase in income (%)
Asoda Todran	7	Control	24.14	---	27354	---
		Use of Bavistin	34.71	43.78	38981	42.51
Asoda Shiwan	6	Control	25.75	---	29125	---
		Use of Bavistin	37.50	45.63	42050	44.38
Jakhoda	7	Control	22.49	---	25539	---
		Use of Bavistin	31.92	41.93	35912	40.62
Total	20	Control	24.04	---	27244	---
		Use of Bavistin	34.57	43.80	38827	42.51

Varieties : Local Basmati, PB-1,

Product price : Grain Rs.1100/q., Straw Rs. 800/q.

The results in above table 2 depict that the increase in yield and income was varying from one village to another village. The highest yield and income increase was found in the Asoda Shiwan village followed by Asoda Todran and Jakhoda, respectively. However, the overall average yield and income was found to the 43.80 and 42.51 percent, respectively.

Technology assessment and introduction for refinement for insects -pests control-

The problems related to Insect- pest control in paddy were discussed with farmers of the study villages. The leaf roller and leaf hopper was prominently figured as a major insect - pest which damage the paddy crop. Hence, the spray of endosulphan and trico- cards were used in paddy fields for effective control of' insects-pests. This technological intervention had contributed towards the increased yield and income in the study area. The extent of variation in

increase of yield was found to the extent of 34.10, 21.22 and 20.05 percent in the villages of Jakhoda, Asoda Todran and Asoda Shiwan, respectively.

Table 3. Increase in average yield and income due to control of insect complex in paddy crop.

Name of villages	Rep.	Treatment	Average yield (q/ha)	% increase in yield	Av. gross income (Rs/ha)	Increase in income (%)
Asoda Todran	7	Control	20.78	—	26775	—
		Use of IPM	28.60	21.22	32288	20.59
Asoda Shiwan	6	Control	19.50	—	25175	—
		Use of IPM	25.00	20.05	30063	19.42
Jakhoda	7	Control	17.30	—	22425	—
		Use of IPM	26.50	34.10	29800	32.89
Total	20	Control	19.18	—	24775	—
		Use of IPM	28.60	30.92	32187	29.91

Varieties : Local Basmati,

Product price: Grain Rs. 1250/q., Straw Rs. 800/q.

The similar trend was also observed in increase of income of the selected farmers of these villages. The increase in paddy yield and income due to the technological intervention was found quite satisfactory.

Technology assessment and introduction for refinement by use of Blue Green Algae (BGA)—The problem of use of chemical fertilizers was discussed by following participatory approach in the study villages. It was figured in the discussion with farmers that the chemical fertilizers cost is very high and increasing day by day. Thus, to reduce the cost of fertilizers in paddy fields. The new technological intervention i.e. the use of Blue Green Algae was used and the application of the BGA was demonstrated in the paddy field.

Results obtained from the farmer's field along with control showed that there was increase in yield to the extent of 15.75, 10.05, and 6.18 in the villages of Jakhoda, Asoda Shiwan and Asoda Todran respectively. However, the overall average increase in yield was found to the extent of 9.87 percent in the study area. A similar trend was also observed in the increase of income. However, the percentage increase in average yield and income seemed to be not much convincing but the saving of 20% cost of application of nitrogenous fertilizers through application of BGA was the major achievement

and satisfactory to the farmers. Apart from this, it improves the soil health of paddy fields. Thus, this new technological intervention on farmers paddy fields was found to be quite encouraging and popular among the farmers.

Table 4. Increase in average yield and income due to use of Blue Green Algae for higher yield of paddy crop.

Name of villages	Rep.	Treatment	Average yield (q/ha)	% increase in yield	Av. gross income (Rs/ha)	Increase in income (%)
Asoda Todran	7	Control	21.36	—	27500	—
		Use of BGA	22.67	6.13	29138	5.96
Asoda Shiwan	6	Control	21.08	—	27150	—
		Use of BGA	23.20	10.05	29800	9.76
Jakhoda	7	Control	19.35	—	24988	—
		Use of BGA	22.01	13.75	28313	13.31
Total	20	Control	20.57	—	26512	—
		Use of BGA	22.60	9.87	29050	9.57

Varieties : Local Basmati,

Product price : Grain Rs. 1250/q., Straw Rs. 800/q.

CONCLUSION

The study was conducted in the IVLP adopted villages of IARI, New Delhi using participatory approach in the villages of the study area. The problems of the cultivators were identified. Out of the number of problems regarding paddy cultivation particularly Basmati rice, the four area were identified namely, paddy varieties, sheath blight disease, insect- pests control and high cost of nitrogenous fertilizers application in paddy. Thus, the four technological and interventions namely, assessment of high yielding varieties of Basmati rice, control measures or sheath blight disease in paddy (PB-1), control of insect- pests and use of blue green algae for higher yield of paddy crop were used to minimise the problems of paddy cultivation for increasing the yield and income of the farmers.

All the four technological interventions were studied independent on farmer's paddy fields. These technological interventions had increased the yield and income of the selected farmers in the study area. The results of the study were quite encouraging and if replicated in similar situation, it will certainly boost the rice production elsewhere in the country.

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