

Impact of Watershed Crop Production Technology on the Adoption Level of Beneficiary and Non Beneficiary Farmers

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ABSTRACT

The Malpur, Meghraj, Idar, Bhiloda and Dhansura talukas of Sabarkantha District of Gujarat state had covered under National Watershed Development Project in Rainfed Area was purposively selected for the study. Four villages from each talukas were selected purposively. As these villages have maximum number of beneficiaries and maximum area under watershed were taken in to account. Out of twenty selected villages, five beneficiary and five non-beneficiary farmers were selected randomly from each village for making a total sample of 200 farmers. The data were collected by personal interview. Based on the finding of the study, majority of the beneficiary and non-beneficiary farmers fall under the category of medium level of adoption, followed by low level of adoption and high level of adoption. Among the various soil and water conservation technology viz., summer ploughing, tillage across the slope, sowing across the slope and land leveling were adopted by the beneficiary and non-beneficiary farmers, where as in case of crop production technologies use of improved/hybrid/short duration varieties, use of organic manure, hand weeding, use of chemical fertilizers, timely sowing and inter cropping were adopted by the beneficiary and non-beneficiary farmers. Among various personal, socio-economic, psychological and communication characteristics of beneficiary farmers of watershed crop production technology, education, occupation, herd size, irrigation potentiality, extension participation, scientific orientation and risk preference had significant relationship with their extent of adoption of watershed crop production technology. While in case of non-beneficiary farmers, education, occupation and irrigation potentiality had significant relationship with their extent of adoption of watershed crop production technology.

Keywords: Watershed crop production, Adoption

INTRODUCTION

Agriculture is largely depending on natural resources like soil, water and vegetation. Agricultural productivity depends on how efficiently these resources are conserved and managed. On agricultural land, our main interest should be protect the soil and maintain its fertility, conserve the water and to ensure sustained crop yield by adopting appropriate agronomical practices. Realizing the importance of dry land agriculture, the planners at the national level have given top priority to dry land agricultural development programmes. Considering the importance of conservation of soil and water as a basic need for agricultural development the government of India has launched the centrally sponsored scheme "National Watershed Development Project in Rainfed Area" (NWDPR) in the year of 1987-88. The overall objective of

the project is to achieve sustainable production of biomass and restoration of ecological balance in rainfed area.

During the tenth year plan, the project was implemented in all the district of Gujarat state covering 2.25 lakhs ha of land under 191 watersheds. During this plan period emphasis was given to people participation in conducting village level activities. In this project, the economic development of the farmers has to be centered around, increase agricultural production through introduction of improved watershed management technology coupled with generating the employment with a view to stopping deterioration of environment which effects production of food, fuel, fodder and ultimately living organism including animals and human being. Gujarat State Land Development Corporation (GLDC) is the implementing agency of NWDPR in the state. The

programme uses the practice-wise holistic approach and broad components were Soil and water conservation, Water harvesting and its recycling and Alternate land use system.

OBJECTIVES

- 1 To study the impact of watershed crop production technology on the adoption level of beneficiary and non-beneficiary farmers.
- 2 To study the practice-wise adoption of watershed crop production technology by the beneficiary and non-beneficiary farmers
- 3 To find out the relationship between personal, socio-economic, communication and psychological characteristics of beneficiary and non-beneficiary farmers with their adoption of watershed production technology.

METHODOLOGY

The present study was conducted in Sabarkantha district of Gujarat state. There are Thirteen talukas in the district. Ten talukas were covered under National Watershed Development Project in Rainfed Area. Out of them five talukas viz., Malpur, Meghraj, Idar, Bhiloda and Dhansura were selected purposively for the study, as these talukas have maximum villages under watershed project and maximum area under watershed were taken in to account. Four villages from each talukas were selected purposively.

As these villages have maximum number of beneficiaries and maximum area under watershed were taken in to account. Out of twenty selected villages, five beneficiary and five non-beneficiary farmers were selected randomly from each village for making a total sample of 200 farmers. The twenty four watershed crop production technologies were selected as possible components of extent of adoption. Keeping in mind the importance of each practice the expert were requested to distribute the marks among selected practice making a total of 100. Then, the weightage assigned by each expert to individual technology was summed up and arithmetic mean was calculated and rounded of to nearest integral figure. The total adoption score obtained by each individual was then worked out and using mean and S.D., the respondents were grouped into three categories like, Low, Medium and High Adoption level. Appropriate statistical procedure and test were applied measurement of different variables included in the study.

RESULTS AND DISCUSSION

The “adoption process” is the mental process through which an individual passes from first hearing about an innovation to its final adoption while, “adoption” is a decision to continue full use of innovation. The data for the adoption of watershed crop production technology in use of soil and water conservation and crop production practices are presented in Table: 1.

Table: 1 Distribution of beneficiary and non beneficiary farmers according to their adoption level of watershed crop production technology n=200

Sr. No.	Category	Beneficiary		Non-beneficiary		‘t’value
		Frequency	Per cent	Frequency	Per cent	
1	Low (Up to 39.00 score)	22	22.00	31	31.00	4.51**
2	Medium (40.00 to 55.00 score)	71	71.00	65	65.00	
3	High (56.00 and above score)	07	07.00	04	04.00	

Mean = 47.33; S.D = 8.4544; ** highly significant at 0.01 level

The data presented in Table.1 revealed that majority (71.00 per cent) of the beneficiary farmers fall under the category of medium level of adoption, followed by low level of adoption (22.00 per cent). Only 07.00 per cent of the beneficiary farmers had high level of adoption. Whereas, in case of non-beneficiary farmers, 65.00 per cent of the respondents fall under the category of medium level of adoption, followed by low level (31.00 percent) and high

level (04.00 per cent) of adoption.

The calculated ‘t’ value (4.51) based on the data was found highly significant. This indicated significant difference in adoption of watershed crop production technology between beneficiary and non-beneficiary farmers. This finding was in accordance with Patel (1995) and Karkar (1998).

Table 2 : Practicewise adoption of watershed crop production technology

n=200

Sr. No.	Technology	Beneficiary			Non-beneficiary		
		Frequency	Per cent	Rank	Frequency	Per cent	Rank
I	Soil and water conservation technology						
1	Land leveling	40	40.00	IV	44	44.00	III
2	Summer ploughing	83	83.00	I	80	80.00	I
3	Tillage across the slope	57	57.00	II	46	46.00	II
4	Sowing across the slope	56	56.00	III	41	41.00	IV
5	Contour budding	24	24.00	V	22	22.00	V
6	Tracing	03	03.00	XI	02	02.00	XII
7	Nala plugging	12	12.00	VIII	19	19.00	VI
8	Plantation on building to check soil erosion	12	12.00	VIII	13	13.00	VIII
9	Construction of farm pond	15	15.00	VII	12	12.00	IX
10	Recharging of well	16	16.00	VI	18	18.00	VII
11	Drip/Sprinkler irrigation system	04	04.00	X	06	06.00	XI
12	Small check dam	10	10.00	IX	08	08.00	X
13	Mulching	00	00.00	XII	00	00.00	XII
II	Crop production technology						
1	Use of improved/hybrid/short duration varieties	96	96.00	I	85	85.00	III
2	Timely sowing	67	67.00	VI	50	50.00	VI
3	Inter cropping	65	65.00	VII	60	60.00	V
4	Mid season correction	30	30.00	X	23	23.00	VIII
5	Use of organic manure	94	94.00	II	96	96.00	I
6	Use of chemical fertilizer	86	86.00	V	82	82.00	IV
7	Inter culturing	91	91.00	IV	60	60.00	V
8	Weed management						
	1. Hand weeding	92	92.00	III	87	87.00	II
	2. Use of herbicides	03	03.00	XIV	02	02.00	XIII
9	Plant protection measures						
	1. seed treatment	06	06.00	XIII	08	08.00	XII
	2. pest control	49	49.00	VIII	26	26.00	VII
	3. Disease control	13	13.00	XII	15	15.00	X
10	Supplementary irrigation	34	34.00	IX	22	22.00	IX
11	Planting of trees (fellow land field/boundary)	16	16.00	XI	14	14.00	XI

The data presented in Table.2 indicates that among the various soil and water conservation technology viz., summer ploughing was adopted by 83.00 per cent of the beneficiary farmers and was ranked first, followed by tillage across the slope (57.00 per cent) and sowing across the slope (56.00 per cent) and were ranked second and third respectively. While in case of non-beneficiary farmers, summer ploughing was adopted by 80.00 per cent of the respondents and was ranked first followed by tillage across the slope (46.00 per cent) and land leveling (44.00 per cent) and were ranked second and third respectively.

So far as the crop production technology were concerned, the technologies viz., use of improved/hybrid/

short duration varieties was adopted by 96.00 per cent beneficiary farmers and was ranked first, followed by use of organic manure (94.00 per cent) and hand weeding (92.00 per cent) and were ranked second and third respectively. Where as, use of chemical fertilizers (86.00 per cent), timely sowing (67.00 per cent) and inter cropping (65.00 per cent) were ranked fourth, fifth and sixth respectively. While, in case of non-beneficiary farmers, use of organic manure was adopted by 96.00 per cent of the respondents and was ranked first, followed by hand weeding (87.00 per cent) and use of improved/hybrid/short duration varieties (85.00 per cent) and were ranked second and third respectively. Where as, use of chemical fertilizers (82.00 per cent) and inter cropping (60.00 per cent)/ inter cropping (60.00 per cent) were ranked fourth and fifth respectively.

Incase of soil and water conservation technologies, mulching was not adopted by any respondents. The probable reason might be that lack of information, less availability of mulches materials and lack of skill oriented mulch labour. This finding was supported by Patel (2000).

Table 3 : Relationships between selected charecteristics of beneficiary and non-beneficiary farmers with their extent of adoption watershed crop production technology n=200

Sr. No.	Characteristics	Coefficient of correlation value with extent of adoption	
		Beneficiary	Non-Beneficiary
1	Age	-0.1303 NS	-0.0073 NS
2	Education	0.4716**	0.4252**
3	Social participation	0.0428 NS	-0.0212 NS
4	Occupation	0.2146**	0.1875*
5	Land holding	0.1275 NS	0.1107 NS
6	Herd size	0.1801*	0.0121 NS
7	Irrigation potentiality	0.2314**	0.6891**
8	Extension participation	0.2798**	0.0038 NS
9	Scientific orientation	0.1965**	0.1076 NS
10	Risk preference	0.2377**	0.0421 NS

* Significant at 0.05 level probability;

** Highly significant at 0.01 level probability;

NS = Non- significant.

The data presented in Table.3 revealed that, among various personal, socio-economic, psychological and communication characteristics of beneficiary farmers of watershed crop production technology, education (0.4716), occupation (0.2146), herd size (0.1801), irrigation potentiality (0.2314), extension participation (0.2798), scientific orientation (0.1965) and risk preference (0.2377) had significant relationship with their extent of adoption of watershed crop production technology, While age (-0.1303), social participation (0.0428) and land holding (0.1275) of beneficiary farmers were found to be non-significant relationship with their extent of adoption of watershed crop production technology.

For non-beneficiary farmers, education (0.4252), occupation (0.1875) and irrigation potentiality (0.6891) had significant relationship with their extent of adoption of watershed crop production technology. While age ((-0.0073), social participation (-0.0212), land holding (0.1107), herd size (0.0121), extension participation (0.0038), scientific orientation (0.1076) and risk preference (0.0421) were found to be non-significant relationship with their extent of adoption of watershed crop production technology. This finding was in

line with the finding of Karkar (1998) and Patel (2000).

CONCLUSION

Majority of the beneficiary farmers fall under the category of medium level of adoption, followed by low level of adoption and high level of adoption. While in case of non-beneficiary farmers, majority of the respondents fall under the category of medium level of adoption, followed by low level and high level of adoption.

Among the various soil and water conservation technology viz., summer ploughing, tillage across the slope and sowing across the slope were adopted by the beneficiary farmers, While in case of non-beneficiary farmers, summer ploughing, by tillage across the slope and land leveling were adopted by the respondents.

So far as the crop production technology were concerned, the technologies viz., use of improved/hybrid/short duration varieties, use of organic manure, hand weeding, use of chemical fertilizers, timely sowing and inter cropping (65.00 per cent) were adopted by the beneficiary farmers. While in case of non-beneficiary farmers, use of organic manure, hand weeding, use of improved/hybrid/short duration varieties, use of chemical fertilizers, inter cropping and inter cropping were adopted by the respondents. .

Among various personal, socio-economic, psychological and communication characteristics of beneficiary farmers of watershed crop production technology, education, occupation, herd size, irrigation potentiality, extension participation, scientific orientation and risk preference had significant relationship with their extent of adoption of watershed crop production technology. While in case of non-beneficiary farmers, education, occupation and irrigation potentiality had significant relationship with their extent of adoption of watershed crop production technology.

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