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Impact of Watershed Development Programme on Cropping Pattern and Intensity of District Hisar

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Abstract:

Effective use of natural resources to develop the agro-based economy is fundamental condition. Indian economy can be placed among the countries which depend on the agricultural sector for its development. For over-all development of the economy, it becomes necessary that the production should meet the demands of the other sector of the economy. So, the government of India tries to change in the direction of the cropping-pattern in accordance with the demands of the economy. To fulfill this objective, it has started many development programmes. The Watershed Development Program is one of the important programs among them. This approach seeks to improve all types of land, forest, community as well as the potential production. How far, this programme has made improvement in the production of Hisar district of Haryana state, is the objective undertaken in the present study. In order to fulfill this objective, primary data have been collected from two villages of two blocks of Hisar district of Haryana state. Simple statistical techniques have been used for the data analysis viz. averages, percentages etc. The present study suggests regarding cropping pattern that the area of block -1 has been dominant for the paddy crop and cotton has found a dominant position in block-2 during kharif crop after the implementation of the project. But the position has become worsened for Bajra, mustard and sugar cane in both of the blocks. There has been no change in cropping intensity in percentage terms.

1. Introduction

To attain the objective of the growth of any agricultural-based economy while maintaining the sustainability of the resources, to ensure effective use of natural and social capitals of any economy is the pre-requisite. It is a general feeling that maintenance and development of natural resources is the synonymous to the sustainable development. Every economy, which depends on agriculture sector strives to exploit its resources to its full capacity, but what matters most is the manner in which it uses these precious resources. Land and water are the most important natural resources to sustain the growth rate of agricultural sector as well as the entire economy. To achieve the goal of growth through rationale use of natural resources in India, Watershed Development Programme has started in India and it has been essential in the country like India where a large hunk of land has been recorded as rain-fed. Due to the constraints given by climate conditions to rain-fed areas, the farmers in these specific areas are restricted to grow only those crops which requires of less water, but to meet the requirement of the crops in respect of water, it becomes imperatives for the authority of any country to make the farmers sufficient able to grow the crops which have high demand in the market as well as are of the high profitability in nature. To provide better facilities with farmers to come out from the low chances of making choices regarding crop selection poured by the weather conditions of the country, the efforts have been made by the Indian government so that farmers can take a decision in respect of crop selection for their farmers to reap the results of the growing demand of some particular crops by producing the crops in accordance with the consumer's preferences. At the same time, government can affect the farmers for making change in the cropping pattern of the state in accordance with the demand of the state. How far, the efforts of the government in the form of Watershed Development Programme have succeeded in making change in the cropping –pattern which is the crucial point around which the present study revolves.

2. Specific Objectives of the Study

- To examine the impact of watershed development programme (HARYALI) on cropping-pattern of Hisar district.
- To examine the impact of watershed development programme (HARYALI) on cropping- intensity of Hisar district.

3. Methodology

The present study has been conducted in the Hisar district. The multistage purposive sampling technique has been used to select the primary sampling units' viz. sample households. In order to achieve the specific objectives, two blocks have been selected for the study in Hisar district. In block-1, village Sisai-Bolan has been selected for being the largest village of Haryana state. In block-2, the Kheri - globe has been

selected for being a very small village in comparison to the first village. 50 respondents have been selected from each village of each block. The selected farmers have been divided into three categories viz. small, medium and large according to their land holdings.

4. Analytical Tools and Techniques

In the present study, data collected from primary source have been analyzed to assess the impacts of watershed programme. Simple statistical techniques have been used for the data analysis viz. averages, percentages, etc. and the cropping intensity have been calculated by using the following formula:

5. Cropping Intensity

- Gross cropped area is then sown more than once in an agricultural year plus net sown area.
- Net sown area is the total area sown with crops in a country. Area sown more than once is counted once only.

6. Results and Discussion

This section of the paper provides the furnished results related to the change in cropping-pattern and cropping-intensity. The impact of the Watershed programme has been analysed by calculating percentage change in the cropping-pattern and cropping-intensity and the results for the same has been presented in the respective tables.

Percentage change (Acre) in cropping pattern by the households of block-1 and block-2 in various land holding class before and after the implementation of programme: The finished results related to change in cropping pattern are depicted in table 1. It is seen from the results that there has been significant change in cropping in both of the blocks. However, There has been more noticeable change in case of block-1 as the area under paddy has increased in case of all types of farmers. The percentage change in the area of paddy in case of large farmer has been accounted for 47.3 percent, followed by a medium farmer with 39.2 per cent and small farmer with 30.1 percent. One thing which has also drawn the attention is that the area under sugarcane has decreased in all types of farmers. The situation has found in favour of the paddy crop but went against Bajra and cotton crops in block-1 as the figures related to the area under those crops have been recorded in negative figures in the same block due to shifting of land from Bajra and cotton to paddy crop. As far as Block-2 is considered, the area has diverted in favour of cotton in place of paddy due to less availability of water in Block-2 in comparison to Block-1. A comparison made upon both of the blocks revealed the fact that the picture has remained almost same regarding the area allocation of Rabi crops in both of the blocks as there has been recorded positive impact of the watershed development program on both the blocks in reference to area allocation of wheat crop but the same project has proved negative for the area allocation under Bajra, mustard and sugarcane in both of the blocks. In case of Rabi crops, there has been noticed greater increased in the area allocation under wheat crop in Block-2 as compared to Block-1 and this holds true for all types of farmers. So, the conclusion can be drawn from the above table that the area of block -1 has been dominant for the paddy crop while cotton has found a dominant position in block-2 during the kharif crop. The reason behind negligible production of paddy crop in block-2 is due to the shortage of water naturally available in the area when make a comparison to block-1. But during Rabi season, no significant difference has been noticed in case of both the blocks.

Block-1										Block-2								
Land category	Small			Medium			Large			Small			Medium			Large		
	Before %	After %	% change	Before %	After %	% change	Before %	After %	% change	Before %	After %	% change	Before %	After %	% change	Before %	After %	% change
Kharif crop																		
Cotton	17 (47.22)	23 (42.20)	-5.02	55 (49.3)	43 (33.0)	-16.3	34 (44.7)	48.50 (38.3)	-6.4	17 (73.99)	32.50 (67.80)	-6.19	30 (53.3)	73 (62.40)	9.1	27 (51)	72 (59)	8
Paddy	7 (19.44)	27 (49.54)	30.1	22.50 (20.8)	78 (60.0)	39.2	4 (5.2)	66.50 (52.5)	47.3	0	0		0	0	0	0	0	
Bajra	10.50 (29.16)	2 (03.66)	-25.5	25 (22.6)	4 (3.0)	-19.6	33 (43.4)	7.50 (5.9)	-37.5	5 (21.61)	11.50 (23)	1.39	23 (41.5)	39 (33.33)	-8.17	24 (46)	49 (40)	-6
Sugarcane	0	0		5 (4.8)	0	-4.8	3.50 (4.6)	0	-4.6	0	0		0	0	0	0	0	0
Fodder	1.50 (04.16)	2.50 (4.58)	0.42	2.50 (2.2)	5 (3.8)	1.6	1.50 (1.9)	4 (3.1)	1.2	1 (4.4)	4.50 (9.2)	4.8	3 (5.2)	5 (4.3)	-0.9	1 (3.0)	1 (1.0)	-2
Total	36 (100)	54.50 (100)	-	112.5 0 (100)	130 (100)	-	76 (100)	126.5 0 (100)	-	23 (100)	48.50 (100)		56 (100)	117 (100)		52 (100)	122 (100)	
Rabi crop																		
Wheat	35 (97.22)	53.50 (98.16)	0.94	89 (79.5)	116 (89.2)	9.7	87.5 (66.50)	115 (90.9)	3.4	13.50 (58.61)	37 (76.65)	18.04	29 (51.5)	72.50 (62)	10.5	27 (51)	77 (63.5)	12.5
Mustard	0	0		16 (13.7)	8 (6.1)	-7.6	5.9 (4.50)	7 (5.5)	-0.4	8 (34.99)	9 (18.35)	-16.64	23.50 (42.2)	38.50 (33)	-9.2	22 (42)	40 (33)	-9.5

Sugarcane	0	0		3.50 (3.1)	0	-3.1	4 (1.3)	0	2.2	0	0		0	0		0	0	
Fodder	1 (02.77)	1 (01.83)	-0.94	4 (3.5)	6 (4.6)	1.1	1 (5.2)	4.50 (1.2)	-4.0	1.50 (5.92)	2.50 (5.0)	-0.92	3.50 (6.3)	6 (5)	-1.3	3 (6.7)	5 (4.0)	-2.7
Total	36 (100)	54.50 (100)	-	112.5 0 (100)	130 (100)	-	76(10 0)	126.5 0 (100)	-	23 (100)	48.50 (100)		56 (100)	117 (100)		52 (100)	122 (100)	
Net cropped area	36	54		112.5 0	130		76	126.5 0		23	48.50		56	117		52	122	
Gross cropped area	72	108		225	260		152	253		46	97		112	234		104	244	
Cropping intensity	200%	200%		200%	200%		200%	200%		200%	200%		200%	200%		200%	200%	

*Table 1: Percentage Change in cropping pattern (Acre) by the households of block-1 and block-2 in various land holding class before and after the implementation of programme
Figures in parenthesis represent the percentages*

Percentage change in cropping pattern by the households of Hisar district in various land holding class before and after the project: The results related to change in cropping pattern in case of small, medium and large farmers in Hisar district are reflected through the figures presented in Table 2. It has been observed that there has been increase in area in favour of paddy and wheat in case of all types of farmers. The maximum positive change in acreage has been occurring in the case of paddy crop but it has been the large farmers who shifted maximum land in favour of paddy crop from its competing crops. There has been 23.69 percent increase in case of large farmers and 17.63 per cent increase in case of medium farmers and 14.35 per cent in case of small farmers respectively. In respect of land allocation under wheat crop, maximum wheat acreage has been increased by the medium farmers followed by small farmers. But in case of fodder, maximum percentage change has been taking place in case of small farmers. The area under cotton, Bajra, sugarcane and mustard has decreased despite the maximum change has exhibited in the case of Bajra. So, the results support the fact that the area under Bajra and sugarcane has been replaced with the paddy crop in case of kharif crops. In case of Rabi crops, wheat has been found, itself sufficient able to shifted the land in its favour from its competing crops i.e., mustard, sugarcane. It is also found that there has been an increase in the net cropped area in case of small, medium and large farmers and the same holds true at the overall level also. The cropping intensity in case of all types of farmers has been observed as 200 per cent.

Land category (acre)	Small			Medium			Large			Total		
	Before	After	%	Before	After	%	Before	After	%	Before	After	%
Kharif crop												
Cotton	34 (57.62)	55.5 (53.88)	-3.74	85.5 (50.74)	116 (46.96)	-3.78	61(47.66)	121.5 (48.99)	1.33	180.5(5 0.85)	293(49)	-1.85
Paddy	7 (11.86)	27 (26.21)	14.35	23.5 (13.95)	78 (31.58)	17.63	4 (3.12)	66.5 (26.81)	23.69	34.5(9. 72)	171.5(2 8.68)	18.96
Bajra	15.5 (26.27)	14.5 (14.08)	-12.19	48.5 (28.78)	43 (17.41)	-11.37	57 (44.53)	56.5 (22.78)	-21.75	121(34. 08)	114(19. 06)	-15.02
Sugarcane	0	0	0	5.5 (3.26)	0	-3.26	3.5 (2.73)	0	-2.73	9(2.53)	0	-2.53
Fodder	2.5(4.24)	6 (5.83)	1.59	5.5 (3.26)	10(4.04)	0.78	2.5 (1.95)	5 (2.05)	0.1	10.5(2. 96)	21(3.51)	0.55
Total	59(100)	103(10 0)		168.5	247		128	248		355	598	
Rabi crop												
Wheat	48.5 (82.20)	90.5 (87.86)	5.66	118.5 (70.33)	188.5 (76.32)	5.99	93.5 (73.05)	192 (77.42)	4.37	260.5(7 3.27)	471(78. 76)	5.49
Mustard	8(13.55)	9 (8.74)	-4.81	39 (23.15)	46.5 (18.83)	-4.77	26.5 (20.70)	47 (18.95)	-1.75	73.5(20 .67)	102.5(1 7.14)	-3.53
Sugarcane	0	0	0	4 (2.37)	0	-2.37	4 (3.13)	0	-3.13	4(1.12)	0	-1.12
Fodder	2.5(4.23)	3.5 (3.40)	-1.19	7 (4.15)	12 (4.86)	0.71	4 (3.13)	9.5 (3.83)	0.7	13.5(3.8 0)	25(4.18)	0.38
Total	59(100)	103(10 0)	-	168.5(1 00)	247(100)		128(100)	248(10 0)		355.5(1 00)	598(10 0)	
Grand total	118	206		337	494		256	496		710	1196	
Net cropped area	59	103		168.5	247		128	248		355.5	598	
Gross cropped area	118	206		337.0	494		256	496		710	1196	
Cropping intensity	200%	200%		200%	200%		200%	200%		200%	200%	
Increased cropped area	0	0		0	0		0	0		0	0	

Table 2: Percentage of cropping pattern (Acre) by the households of Hisar district in various land holding class before and after the project Figures in parenthesis represent the percentages

7. Conclusion

The results related to the cropping pattern of district Hisar as well as Block-1 and Block-2 suggest that there has been increase in area in favour of paddy crop during kharif season while same position has been occupied by a wheat crop during Rabi season indicating the positive impact of the watershed development program. So, it is revealed by the study that the area of block -1 has been dominant for the paddy crop while cotton has found a dominant position in block-2 during kharif crop. But things have gone against bajra, mustard and sugarcane as results for those crops have been recorded in negative figures signifying the negative impact of watershed development programme in respect of the these concerned crops. There has been no change in cropping intensity in percentage term.

8. References

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