

To Study the Effect of Watershed Development Project (under DPAP) in Tonk District of Rajasthan

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Abstract

The study was conducted in Deoli Panchayat Samiti, Tonk district of Rajasthan. One Panwar Watershed Project was selected as maximum area covered under the project. This project covered two villages viz., namely Panwar and Madhosinghpura. The watershed development area is under DPAP (Drought Prone Area Programme). 30 farmers were selected randomly from the villages selected under watershed development project and 30 farmers were selected from the villages not covered under watershed development project. The primary data of 2012-13 were collected and analyzed by using various statistical measures like average, ratios and percentage etc. The absolute and per cent increase in net income was observed on all the categories of beneficiary farmers over to the non-beneficiary farmers. The maximum increase in net income per hectare was observed in case of small farmers (15.10%) followed by medium farmers (13.68%) and large farmers (12.17%). The impact of DPAP on pattern of consumption expenditure had not been the same. The relative increase in consumption expenditure for different categories of beneficiary farmers were at varying rates. The same was true for expenditure on various components like food, clothing, education, fuel, building, electricity charge and others. The marginal propensity to consume maximum was 0.39 on large farmers, minimum was 0.03 on small farmers and 0.21 on medium over non-beneficiary farmers. The incremental consumption expenditure to fulfill the desired demand of various items of consumption expenditure. The absolute and per cent increase in annual employment was observed on small and medium categories of beneficiary farmers over and above to the non-beneficiary farmers. But, large farmers were lowest employed. The maximum percentage medium farmers were 3.85 per cent increase followed by 2.86 per cent in employment was observed in case of small farmers and large farmers 2.53 per cent as compared to non-beneficiary farmers. The major constraints coming in the way of watershed development areas were the inadequate training of the farmers about the use of watersheds, high cost of inputs, lack of credit facilities, and lack of coordination among beneficiaries.

Keywords: Beneficiaries Non-beneficiaries, Investment, consumption

Introduction

A watershed or catchment is an area from which all water drains to a common point, making it an attractive unit for technical efforts to manage water and conserve soil for improving production. In water scarce areas, the objective is to capture water during rainy period for subsequent use in the dry periods. This involves conserving soil moisture and supporting crop growth, encouraging water filtration to recharge aquifers and harvesting surface runoff water in small ponds or tanks. Watershed management is the process of creating and implementing plans, programs and projects to sustain and enhance watershed function that affect the plant, animal and human communities within a watershed boundary. The Government of India aggressively intensified watershed development programme in fragile and high-risk ecosystems, where the farm incomes descended due to excessive soil erosion and moisture stress. It was viewed that the

watershed programmes augment farm income, raise agriculture production and conserve soil and water resources in rain fed areas by providing appropriate technical and financial support. With voluntary farmer's participation, sustainable improvement in crop and animal production is possible.

Research Methodology

Tonk district was selected purposively as it has a significant area under watershed development programme and the researcher is fully acquainted with this region. The district comprises 6 Panchayat Samities, out of these; one Panchayat Samiti, Deoli was purposively selected because this Panchayat Samiti covered maximum area under watershed project. Panwar Watershed Project was purposively selected as maximum area covered in under the project. This project covered two villages viz., namely Panwar and Madhosinghpura. The watershed

development area is under DPAP (Drought Prone Area Programme) Scheme sponsored by Central Govt. and state Govt. 30 farmers were selected randomly from the villages selected under watershed development project, and 30 farmers were selected from the villages not under watershed development project.

Schedule for data collection :

The schedule was used to gather general information of respondents and change in cropping pattern and production pattern and also to assess the effect of watershed on the levels of employment, income and consumption.

Analysis of data :

After collection of data, data were processed and analyzed using various statistical tools. To study the extent of improved management practices followed by the farmers such as HYV seeds, fertilizers, pesticides, insecticides etc. in the integrated watershed development area and to identify the major constraints in effective use of watershed development project, tabular analysis was done. To assess the effect of watershed on the level of employment, income, and consumption of the farmers, the following measures were used.

Benefit-Cost Ratio (BCR): The analysis of benefit-cost ratio (BCR) is an important tool to assess economics of farming as practiced by farmers. It is the ratio of net value of the crop produce (minus cost of inputs) to the cost of input. It indicates the rate of net returns from the use of an input. The Benefit-Cost Ratio (BCR) was worked out using the following formula:

$$BCR = \frac{\text{Present worth of stream of gross returns}}{\text{Present worth of stream of cost}}$$

Gross income : Refers to the total income of the family earned by all the members of the family from all sources during the one year period of the study. Gross income included crop income, Dairy income, off farm income.

Crop Income: The entire gross produce (main and by-product) evaluated at market prices.

Off farm activity Income: The actual earnings to the family members from all the activities other than crop activity

Changes in net incomes : Net income refers to the gross income generated from different agricultural and non agricultural activities less the expenditures incurred to take up these activities. Symbolically it was expressed as:

$$\text{Net Income} = \text{Gross Income} - \text{Total Expenditure}$$

Changes in employment levels : To estimate the changes in employment levels, employment of family members was calculated in man-days engaged in all the activities. Changes in employment generation were studied by measuring the changes in employment levels of beneficiary over that of non-beneficiary families

during the study period. The total employment was worked out by adding the employment hours on crop activities and off farm activities.

Changes in consumption expenditure: To estimate the changes in consumption expenditure, total expenditure on consumption was grouped into seven heads namely food, clothing, education, building, fuel, electricity and others. The changes in total consumption expenditure were studied by measuring the changes in total consumption expenditure of beneficiary families over that of non-beneficiary families during the study period.

Gross return: Gross return refers to the total income of the farmers earned from crop sources during the study period. Gross return included both crop income as well as off farm activities income.

Crop income: The entire gross produce (main and by-product) was evaluated at market prices.

Labour income: The entire gross income (landless workers) evaluated at village level prices.

Change in net return : Net return refers to the gross return generated from different agricultural activities less the expenditures incurred to take up these activities. Symbolically it was expressed as:

$$\text{Net return} = \text{Gross Return} - \text{Total Expenditure}$$

The changes in the net return of the beneficiary farmers were calculated by subtracting the net return of non-beneficiary from that of beneficiary farmers.

Results and Discussion

Benefit-Cost Ratio of Beneficiary and Non-beneficiary farmers :

An overview of data presented in Table 1 indicate that increased benefit-cost ratio of beneficiary over non-beneficiary farmers in small category farmers get highest benefit-cost ratio through mung bean 2.20, followed by mustard 2.13, gram 1.97 which were more than non-beneficiary farmers benefit-cost ratio through mung bean 2.12, followed by mustard 1.84, gram 1.80. Other crops also had lower B:C ratio on non beneficiary farms than beneficiary farmers. The Table also indicated that medium farms under beneficiary farmers get higher benefit-cost ratio with mustard 2.78, followed by mung bean 2.34, gram 1.99 over the non-beneficiary farmers, which get benefit-cost ratio with mustard 2.52, followed by mung bean 2.12, and gram 1.83. Similarly, large farms in beneficiary farmers get benefit-cost.

Net income of non-beneficiary farmers :

The each farmer annual gross income generated, expenditure incurred and resultant net income accrued to non-beneficiary farmers from agricultural and non-agricultural activities was worked out.

It is evident from the Table 2 that the net income of non-beneficiary farmers increased with the increase in the size of farm.

It is clear from the Table 3 that as the size of holding increases, the net income accrued from

Table 5: Annual consumption expenditure incurred by non-beneficiary farmers on different items (Rs./Farmer/Annum)

Category	Expenditure on							Total consumption expenditure	Net income Difference	Consumption expenditure as % tage of net income (%)	
	Food	Clothing	Education	Fuel	Building	Electricity charge	Others				
Non-beneficiary farmers											
Small Farmers (41.32)*	41921.05 (6.58)	6671.05 (4.08)	4142.11 (20.73)	21026.32 (3.35)	3402.63 (15.03)	15245.47 (8.92)	9044.74 (100.00)	101453.37	111943.73	10490.36	90.63
Middle Farmers (42.03)	47688.89 (6.97)	7907.78 (3.18)	3606.67 (22.86)	25933.33 (5.03)	5711.11 (14.18)	16092.44 (5.75)	6527.78 (100.00)	113468.00	134076.95	20608.95	84.63
Large Farmers (39.73)	50825.00 (6.62)	8475.00 (3.62)	4630.00 (21.69)	27750.00 (6.09)	7785.00 (13.27)	16972.50 (8.99)	11495.00 (100.00)	127932.50	158119.45	30186.95	80.91
Beneficiary farmers											
Small Farmers (41.23)*	42031.25 (6.62)	6750.00 (4.17)	4250.00 (20.69)	21093.75 (3.43)	3496.88 (14.98)	15275.25 (8.88)	9053.13 (100.00)	101950.25	128247	26297.19	79.49
Middle Farmers (41.32)	48563.64 (7.16)	8420.91 (4.28)	5036.36 (22.35)	26272.73 (5.43)	6381.82 (13.83)	16252.45 (5.62)	6609.09 (100.00)	117537.00	153018	35481.43	76.81
Large Farmers (38.29)	51883.33 (6.76)	9166.67 (4.72)	6400.00 (22.42)	30383.33 (6.11)	8283.33 (12.80)	17349.67 (8.89)	12040.00 (100.00)	135506.33	177368	41861.50	76.40

Figures in the parenthesis indicate percentage to the total

Table 6: Change in annual consumption expenditure on beneficiary farmers over non-beneficiary farmers (Rs./Farmer/Annum)

Category	Expenditure on							Total consumption expenditure	Net income Difference	Consumption expenditure as % tage of net income (%)	
	Food	Clothing	Education	Fuel	Building	Electricity charge	Others				
Small Farmers (22.18)*	110.20 (15.89)	78.95 (15.89)	107.89 (21.71)	67.43 (13.57)	94.24 (18.97)	29.78 (5.99)	8.39 (1.69)	496.88 (100.00)	16303.71	15806.82	3.05
Middle Farmers (21.50)	874.75 (513.13)	513.13 (12.61)	1429.70 (35.14)	339.39 (8.34)	670.71 (16.48)	160.01 (3.93)	81.31 (2.00)	4069.00 (100.00)	18941.49	14872.49	21.48
Large Farmers (13.97)	1058.33 (691.67)	691.67 (9.13)	1770.00 (23.37)	2633.33 (34.77)	498.33 (6.58)	377.17 (4.98)	545.00 (7.20)	7573.83 (100.00)	19248.39	11674.55	39.35

*Figures in the parenthesis indicate percentage to the total

by medium farmers (14.13%), and large farmers (12.17%). This may be due to full utilization of available resources with small farmers.

Change in consumption levels

In this section an attempt has been made to study the changes in consumption expenditure of beneficiary farmers as a result of DPAP. The total expenditure on consumption was grouped into seven heads namely food, clothing, education, fuel, buildings, electricity charge and others. The impact of DPAP on consumption expenditure was studied by measuring the changes in consumption expenditure of beneficiary farmers over that of non-beneficiary farmers during the study period.

Pattern of consumption expenditure of non-beneficiary farmers

It is clear from the above table 5, that as the farm size increased the absolute expenditure on all the items increased but in percentage term it was decreased.

Pattern of consumption expenditure of beneficiary farmers

It can be concluded from the table 5 that as the farm size increased the absolute expenditure on all the items increased but in percentage term no set pattern was observed of expenditure on beneficiary farmers.

Changes in consumption :

It is clear from the table 6 that a considerable gain in terms of net income and total consumption expenditure was observed to the beneficiaries under DPAP programme. This increased consumption expenditure shared more on education, food, building, clothing, electricity, others and less on the fuel which is according to the general theory of consumption.

Changes in employment level

This section deals with changes in employment levels of the beneficiary farmers caused as result of DPAP programme. For estimating the changes in employment levels, employment was calculated in man days engaged in all the activities.

Labour employed on non-beneficiary farmers

Table 7: Labour employed on non-beneficiary farm (Man days/Year)

Farm category	Crop activity	Off farm activity	Total
Small	340	139	479
Medium	336	86	422
Large	316	-	316

The table 7 indicates the total labour employed by non-beneficiary farmers from different agriculture and non agricultural activities. Depict that the total labor employed per year on non-beneficiary farmers were 479, 421 and 316 man days for small, medium and large farmers' category. Thus, it can be concluded that as the farm size increased and the employment of labour (Man days/Year) decreased due to major use

of farm mechanization.

Labour employed on beneficiary farmers

Table 8: Labour employed on beneficiary farm (Man days/Year)

Farm category	Crop activity	Off farm activity	Total
Small	338	154	492
Medium	329	109	438
Large	324	-	324

The total labour employed by beneficiary farmers from different agricultural and non-agricultural activities is presented in Table 8. The table revealed that the beneficiary small farmers through crop and off farm activities employed for 338 and 154 man days/year, respectively and total man days were 492 from different activities in a year.

Changes in employment a level

The number of effective man days of labour generated by the different categories of beneficiary farmers over the non-beneficiary farmers as a result DPAP assistance is presented in Table 9.

Table 9: Change in Labour employed on beneficiary farmers over non beneficiary farmers (Man days/Year)

Farm category	Bene- ficiary	Non- Beneficiary	Differ- ence	% changes labour employed of ben efiary over non- beneficiary farmers
Small	492	479	13	2.6
Medium	438	421	17	3.9
Large	324	316	8	2.4

It is clear from the table 9 that absolute and percentage increase in annual employment was observed on small and medium categories of beneficiary farmers over above to non - beneficiary farmers. But, large farmers were lowest employed. The maximum percentage of medium farmers is 3.9% increase followed by 2.6% employment was observed for small farmers and large farmers 2.4% compared to non-beneficiary farmers.

References

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