Annals of Arid Zone 49(2): 127-130, 2010

An Economic Analysis of Watershed Development Project in Udaipur District of Rajasthan

Ashvini Kumar Jain[1], S.S. Burark[1]*, D.C. Pant[1] and H.K. Jain[2]

[1] *Department of Agricultural Economics & Management, MPUAT, Udaipur 313 001, India*

[2] *Department of Statistics, MPUAT, Udaipur 313 001, India*

Abstract: The study conducted on Watershed Development Project in Mavli Panchayat of Udaipur District showed that the maximum percentage increase in net income (36.7%) was for marginal beneficiary farmers followed by small (27.23%), medium (7.66%) and large beneficiary (7.48%) farmers. The IWDP helped to increase the consumption expenditure, which was minimum on large farms (Rs. 2187 per annum) and maximum on medium farms (Rs. 6506 per annum). The relative increase in consumption expenditure for different categories of beneficiary families was not similar. The same was true for expenditure on various components like food, clothing, education, fuel, building and others. The absolute and per cent increase in annual employment was observed on all the categories of beneficiary farmers.

Key words: Beneficiaries, income, consumption, employment, IWDP, NWDPRA

In India about 64% of the working population depends upon agriculture for their livelihood. Irrigation facilities created so far are less than the potential and the total net sown area is only 36%. A large portion of agricultural land depends upon monsoon, which contributes about 42% of country's total food grain output (MoA, GoI, 2008).

The favorable impact of irrigation on creation of additional rural employment for agricultural labors and self employed family workers is quite obvious. While irrigation itself creates additional farm employment, the scope for on-farm employment for other operations associated with irrigation further enhances the rural employment prospects. The increasing trend in cropping intensity in irrigated areas also demands additional rural employment. Large volume of transactions of agricultural inputs and outputs in irrigated area also opens new avenues for employment in the rural areas.

To provide the much-required thrust in the development of rainfed agriculture on watershed basis, the state government setup a separate department on watershed and soil conservation in January 1991. The national watershed development programme (NWDPRA) was taken up in 10 districts since 1991-92. The scheme has been extended to cover all blocks where less than 30% of the area is irrigated. The maximum area covered under Integrated Watershed Development Programme (IWDP) in Rajasthan was in Udaipur District and the maximum number of micro watersheds was also developed in this zone. Thus a study was undertaken to assess the effects of watershed on the level of employment, income and consumption of the farmers.

*E-mail: ssburak@yahoo.com

Materials and Methods

Mavali Panchayat Samiti of Udaipur District was purposively selected out of eleven panchayat samities. Mavali Panchayat Samiti, covered maximum cultivable area (44.99%) of the total geographical area (72892.91 ha). The watersheds Mangthala and Karmando-ka-Gura were selected for detailed data collection. A list of all the beneficiary and non-beneficiary farmers was prepared and categorized in to different groups, namely marginal farmers, small farmers, medium farmers and large farmers. Thus a sample of 40 beneficiary (BF) and 40 non-beneficiary families (NBF; control families) was selected to measure the impact of IWDP in the district. Primary data were collected for the agricultural year 2007-2008 with the help of pretested interview schedule.

The data were subjected to tabular analysis like percentages and averages for measuring the impact of IWDP on the income, employment and consumption levels of the beneficiary families. The impact of IWDP on the net income of beneficiaries was calculated by subtracting the average net income of non-beneficiaries from that of beneficiaries. Similarly, the impact on consumption and employment was studied by measuring the changes in consumption and employment (man-days) of beneficiaries over that of non-beneficiaries.

Results and Discussion

Changes in net income of beneficiary families

The analysis revealed that marginal farmers who obtained assistance under IWDP for agriculture were able to increase their net annual income by Rs. 5463 (35.59%) over and above Rs. 15349 earned by the non-beneficiary marginal farmers (Table 1). The respective increases in net annual income from dairy and labor activities were Rs. 2048 (37.58%) and Rs. 1297 (41.17%) over non-beneficiary. The marginal farmers who obtained assistance under IWDP for different activities were able to increase their net annual income by 36.77% over and above Rs. 23948 earned by the non-beneficiary farmers.

Table 1. Farm size group wise change in annual net income of beneficiary families over non-beneficiary families

Activities	Net income (Rs.)		Increase in income (%)
	BF	NBF	
Marginal farmers			
Agriculture	20812	15349	35.59
Dairy	7497	5449	37.58
Labor	4447	3150	41.17
Total	32756	23948	36.77
Small farmers			
Agriculture	37776	29398	28.49
Dairy	4870	3964	22.85
Labor	2250	1923	17.00
Total	44896	35285	27.23
Medium farmers			
Agriculture	77821	72270	7.68
Dairy	5680	5284	7.49
Total	83501	77554	7.66
Large farmers			
Agriculture	139402	129850	7.35
Dairy	8250	7516	9.76
Total	147652	137366	7.48

BF: Beneficiary families, NBF: Non-beneficiary families.

Small beneficiary farmers were able to increase their net income by Rs. 8378 (28.49%) over and above Rs. 29398 from agriculture earned by non-beneficiary families. Dairy and laboring were the other profitable activities in raising the net income in absolute terms. The absolute increase in net income for dairy was estimated to be Rs. 906, which was 22.85% higher than that of non-beneficiary families. The absolute increase in net income for laboring was estimated to be Rs. 327, which was 17.00% higher than that of non-beneficiary families. The beneficiary small farmers were able to increase their annual net income by 27.23% and above Rs. 35285 earned by non-beneficiary families.

Medium farmers who obtained assistance under IWDP for agriculture were able to increase their net income per year by 7.68% over and above Rs. 72720 earned by non-beneficiary families. The absolute increase in net income through dairy was estimated to be Rs. 396, which was only 7.49% higher than that of non-beneficiary families. The medium farmers who obtained assistance under IWDP for different activities could increase only 7.66% higher net annual income over and above Rs. 77554 earned by non-beneficiary families.

Large beneficiary farmers through agriculture could increase their net income by Rs. 9552 (7.35%) over and above Rs. 129850 earned by non-beneficiary families. The absolute increase in net income for dairy was estimated to be Rs. 734, which was 9.76% higher than that of non-beneficiary families. The large farmers who obtained assistance under IWDP for different activities were able to increase their net annual income by 7.48% over and above Rs. 137366 earned by non-beneficiary families.

Thus, it can be concluded that the net average income of beneficiary farmers increased to a large extent due to the existence of IWDP. The maximum percentage increase in net income (36.7%) was observed for marginal farmers which was followed by small (27.23%), medium (7.66%) and large farmers (7.48%). This may be due to full utilization of the available resources with marginal farmers. The increase in net income of medium and large farmers was not much i.e., about 8% probably due to proper management of available resources at non-beneficiary end.

Changes in consumption

It is obvious from Table 2 that IWDP helped to increase the annual net income of different categories of beneficiary families by Rs. 7947 (medium farmers) to Rs. 10286 (large farmers). Families depending on IWDP of marginal and small farmers for earning their livelihood could increase their net annual income by Rs. 8808 and Rs. 9611.

The total incremental consumption expenditure was minimum for large farmers (Rs. 2187 per annum) and maximum on medium farmers (Rs. 6506 per annum). In case of marginal and small

Table 2. Change in annual cnsumption expenditure on BF over NBF

Category	Excess expenditure made by BF over NBF							Increase in saving over NBF	Percentage increase*
	Food	Clothing	Education	Fuel	Building	Others	Total		
Marginal	3980 (68.42)	290 (4.98)	470 (8.07)	580 (9.97)	441 (7.58)	56 (0.96)	5817 (100.00)	8808	66.04
Small	3495 (63.26)	63 (1.14)	390 (7.06)	965 (17.46)	588 (10.64)	23 (0.41)	5524 (100.00)	9611	57.47
Medium	2963 (45.54)	186 (2.85)	530 (8.14)	986 (15.15)	1194 (18.35)	647 (9.94)	6506 (100.00)	7947	81.86
Large	1113 (50.89)	156 (7.13)	113 (5.16)	513 (23.45)	159 (7.27)	133 (6.08)	2187 (100.00)	10286	21.26

*Consumption expenditure of net income (%).

farmers families incremental consumption expenditure was Rs. 5817 and Rs. 5524 per annum, respectively.

It may be seen from the Table 2 that a major part of the increased consumption expenditure was for food items and ranged from 45.54% for medium farmers to 68.42% for small farmers. Incremental expenditure incurred by beneficiary families to non-beneficiaries on fuel and building were next to the food items in terms of absolute amount as well as on percentage basis. The consumption expenditure towards clothing varied from 1.14% for small farmers to 7.13% for large farmers. Education attracted less attention as it varied from 5.16% for large farmers to 8.14% for medium farmers.

Thus, a considerable gain in terms of net income and total consumption expenditure was observed to the beneficiaries under IWDP programme. This increased consumption expenditure shared more on clothing, education, fuel and less on the food which is according to the general theory of consumption.

After deducting the increase in consumption expenditure from the increase in income, the difference was highest i.e. Rs. 8099 in the case of large farmer families and it was lowest i.e. Rs. 1441 in the selected families of medium farmers.

The change in the total increase in consumption expenditure over the net income was maximum on the selected families of medium farmers i.e. 81.86% followed by the families of marginal farmer (66.04%), small farmer (57.47%) and large farmer (21.26%).

From the above discussion it may be concluded that the impact of IWDP on pattern of consumption expenditure had not been the same. The relative increase in consumption expenditure for different categories of beneficiary families was at varying rates. The same was true for expenditure on various components like food, clothing, education, fuel, building and others.

Changes in employment levels

The findings of the study revealed that marginal farmers who obtained assistance under IWDP for crops were able to increase their annual employment by 36.25% over and above 80 mandays employed by the non-beneficiary (Table 3). Similarly small, medium and large farmers who obtained assistance under IWDP for crops were able to increase their annual employment by 25.82%, 2.69% and 2.64%, respectively, over the non-beneficiaries. Thus, it can be concluded that absolute and per cent increase in annual employment was observed on all the categories of beneficiary farmers over and above to the non-beneficiary farmers.

Conclusions

The maximum percentage increase in net income for the beneficiaries was observed for marginal farmers (36.7%) followed by small, medium and large farmers. The absolute and percentage increase in net income from crops was observed on all the categories of beneficiary farmers. The maximum increase in net income per hectare was observed in case of large farmers (Rs. 1911) followed by small farmers (Rs. 1584), medium farmers (Rs. 994) and marginal farmers (Rs. 356). The impact of IWDP on pattern of consumption expenditure had not been the same. The same was true for

Table 3. Employment generated by the agricultural activities on beneficiary and non-beneficiary farms (Mandays/year/family)

Category	BF	NBF	Per cent change
Marginal	109	80	36.25
Small	190	151	25.82
Medium	305	297	2.69
Large	349	340	2.64

BF: Beneficiary farm; NBF: Non-beneficiary farm.

expenditure on various components like food, clothing, education, fuel, building and others. The absolute and per cent increase in annual employment was observed on all the categories of beneficiary farmers.

References

Janakranjan, S. 1993. Economic and social implications of ground water irrigation: Some evidence from South India. *Indian Journal of Agricultural Economics* 23: 65.

Joseph, C.J. 1986. Socio-economic impact of minor irrigation scheme: A case study. *Indian Journal of Agricultural Economics* 39: 537.

Khatkar, R.K., Gangwar, A.C. and Pandey, U.K. 1987. Impact of IRDP on income, employment and consumption expenditure of rural poor. *Journal of Rural Development* 6: 475-485.

Mahnot, S.C. and Singh, P.K. 1992. Socio-economic evaluation of watershed management project: A case study. *Journal of Rural Development* 7: 219.

Ministry of Agriculture, 2008, *Agricultural Statistics at a Glance*, Govt. of India, New Delhi.

Reddy, V.R., Reddy, M.G., Reddy, Y.V.M. and Soussan, J. 2008. Sustaining rural livelihood in fragile environment: Resource endowments and policy interventions: A study in the context of participatory watershed development in Andhra Pradesh. *Indian Journal of Agricultural Economics* 63: 170-187.