

## Original Research Article

# Impact of Andhra Pradesh Micro Irrigation Project (APMIP) on the Beneficiaries

T. Mahesh Babu, T. Lakshmi\* and P. V. Sathya Gopal

Department of Agricultural Extension, S.V. Agricultural College, Tirupati, 517502, A. P., India

*\*Corresponding author*

## ABSTRACT

The present study was designed to assess the impact of APMIP on the beneficiaries. The results revealed that majority of APMIP beneficiaries had Increase in irrigated area, increase in yield level, decrease in labour usage, decrease in cost of cultivation, increase in income, increase in cropping intensity, and increase in generation assets were the consequences and majority of the respondents had medium level of impact on the beneficiaries as a result of implementation APMIP.

### Keywords

APMIP  
beneficiaries,  
Impact, Micro  
Irrigation System

## Introduction

Water is becoming increasingly scarce in many parts of the world and thereby limiting agricultural development. In India, almost all the easily possible ways for viable irrigation potential have already been tapped. However, the water demand for different sectors has been growing continuously and demand management becomes the overall key strategy for managing scarce water resources. Since agriculture is the major water-consuming sector in India, demand management in agriculture in water-scarce and water stressed regions would be central to reduce the aggregate demand for water to match the available future supplies. For sustainable and precise usage of water there should be a need for effective water management practices such as Micro Irrigation Systems. Keeping in this the Government of Andhra

Pradesh has launched a comprehensive project dedicated completely micro irrigation i.e., APMIP. The APMIP aims at improving the economic conditions of the farmers by conserving water, bringing additional area into cultivation with the available water resources, enhancing the crop productivity and production, quality, facilitating judicious usage of ground water, saving in power consumption and cost of cultivation. The farming community realized the need to adopt the technologies of Micro Irrigation to achieve the concept of “More crop per Drop”. Government of Andhra Pradesh has set a goal to cover the entire potential area available in all the 13 districts of Andhra Pradesh under Micro Irrigation, within the next five years. Keeping in view of this the present paper makes an attempt to study the impact of APMIP on the APMIP

beneficiaries in Chittoor district of Andhra Pradesh.

### **Materials and Methods**

The study was conducted with an ex post facto research design to assess profile characteristics of APMIP beneficiaries in Chittoor district of Andhra Pradesh which was purposively selected, as APMIP was the first special purpose vehicle on the micro irrigation in the country. Chittoor district was selected purposively. Chittoor district consists of 66 mandals out of which 3 mandals were selected based on highest area and beneficiaries were under the APMIP. From the each of selected Mandal eight villages were selected based on simple random sampling procedure. Thus, totally 24 villages were selected for the study. A total sample of 120 APMIP beneficiaries were selected through the simple random sampling procedure. After review of literature and consultation with experts as set of 16 personal, psychological and socio-economic variables were selected. The data was collected through a structured comprehensive interview schedule and analysed using mean and standard deviation for drawing meaningful interpretations.

The impact of APMIP was calculated by combining all the seven indicators *viz.*, Percentage increase in irrigated area [A], Percentage increase in yield level [B], Percentage decrease in labour usage [C], Percentage decrease in cost of cultivation [D], Percentage increase in income [E], Percentage increase in cropping intensity [F], Percentage increase in generation of assets [G]. The final score of 'Impact of APMIP' expressed in 'Percentage' was arrived by using the formula

$$\text{Impact of APMIP} = \frac{[A + B + C + D + E + F + G]}{7}$$

### **Results and Discussion**

#### **Impact of Andhra Pradesh Micro Irrigation Project (APMIP) on the beneficiaries**

##### **Irrigated area (A)**

Table 1 infers that 97.98 percentage increase in irrigated area was observed among the beneficiaries due to adoption of MIS. The reason for the above trend might be due to sustainable use of irrigation water through MIS at root zone with precise quantity of water directly applied to plants with more than 90 per cent of conveyance efficiency and water which was saved through MIS was used for bringing additional land into cultivation. The result was in line with the findings of Radhika (2007).

##### **Yield level (B)**

Table 2 indicated that 46.49 percentage of increase in yield level was observed due to MIS. The reason for the above trend might be that adoption of MIS will enhance the water and input use efficiency which improves the quality and quantity of produce. Similar results were found with the results of Karpagam (2009).

##### **Labour Usage (C)**

The data from table 3, reveals that the 52.16 percentage decrease in labour usage was observed due to adoption of MIS. The possible reason could be that in surface irrigation, two labour has to be engaged for every irrigation but under drip irrigation only one family labour is sufficient to operate the motor for irrigation purpose. Moreover, majority of the respondents reported that due to adoption of micro irrigation, weed population and pest attack was reduced marginally which also resulted in reduction of labour usage.

**Table.1** Percentage increase in irrigated area due to MIS

(n=120)

Season	Irrigated area (in Acres)			
	Before adoption of MIS (BA)	After adoption of MIS (AA)	Difference	% increase in irrigated area
Kharif	2.35	4.84	2.48	105.47
Rabi	2.47	4.84	2.37	96.12
Summer	1.57	2.98	1.41	89.68
Total	6.40	12.67	6.275	<b>97.98</b>

**Table.2** Percentage increase in yield level due to MIS

(n=120)

Season	Yield level			
	Before adoption of MIS (BA)	After adoption of MIS (BA)	Difference	% increase in yield level
Kharif	12.94	18.39	5.45	42.11
Rabi	12.45	18.07	5.62	45.14
Summer	13.09	19.91	6.82	52.10
Total	38.48	56.37	17.89	<b>46.49</b>

**Table.3** Percentage decrease in labour usage due to MIS

(n=120)

Man days/acre/season (No's)			
Before adoption of MIS (BA)	After adoption of MIS (AA)	Difference	% decrease in labour usage
41.39	19.8	21.59	<b>52.16</b>

**Table.4** Percentage decrease in cost of cultivation due to MIS

(n=120)

Season	Cost of cultivation			
	Before adoption of MIS (BA)	After adoption of MIS (AA)	Difference	% decrease in cost of cultivation
Kharif	59058.33	41375.00	17683.33	29.24
Rabi	58641.67	39783.33	18858.33	32.16
Summer	63416.67	44100.00	19316.67	30.45
Total	181116.67	125258.33	55858.33	<b>30.84</b>

**Table.5** Percentage increase in income due to MIS

(n=120)

Season	Income			
	Before adoption of MIS (BA)	After adoption of MIS (AA)	Difference	% of increase in income
Kharif	41479	67620.5	26141.5	63.02
Rabi	39333.33	66309	26975.67	68.58
Summer	40249.67	66481	25829.33	64.17
Total	312491.67	373483.33	102733.33	<b>65.26</b>

**Table.6** Percentage increase in Cropping Intensity (C.I) due to MIS

(n=120)

Area			
Before adoption of MIS (BA)	After adoption of MIS (AA)	Difference	% increase in cropping intensity
80.67	183.08	102.41	<b>126.94</b>

**Table.7** Percentage increase in generation of assets due to MIS

(n=120)

Generation of assets (₹)			
Before adoption of MIS (BA)	After adoption of MIS (AA)	Difference	% increase in generation of assets
100883.33	162166.66	49283.33	<b>60.74</b>

**Table.8** Distribution of respondents according to the impact of APMIP

(n=120)

S. No.	Impact of APMIP	Frequency	Percentage
1.	Low	30	25.00
2.	Medium	55	45.83
3.	High	35	29.17
	<b>Total</b>	<b>120</b>	<b>100.00</b>
Mean=88.12; SD=3.16			

**Based on the scores obtained by the respondents, they were categorized into three groups i.e. low, medium and high, based on mean and standard deviation**

S. No.	Impact of APMIP	Score
1.	Low	Below mean $\frac{1}{2}$ S.D.
2.	Medium	Between mean $\pm \frac{1}{2}$ S.D.
3.	High	Above mean + $\frac{1}{2}$ S.D.

Further, they expressed that minimal tillage practices were sufficient due to adoption of micro irrigation since soil became more pulverized. Similar finding reported by results of Sivanappan (2003).

#### **Cost of cultivation (D)**

Table 4, reveals that 30.84 percentage of the cost of cultivation was creased due to MIS. The probable reason for this trend might be due to the decrease in the cost spent on labour for various farm activities such as irrigation, weeding, fertilizer application, plant protection and also through precise

combined input application directly to the plants. Similar finding reported by Balasubramaniam *et al.*, (2009) envisaged the similar results in their research study.

#### **Income (E)**

Table 5, communicates that 65.26 percentage increase in income due to MIS was observed among the APMIP beneficiaries.

The reason for increased income levels may be due to increase in irrigated area and yield levels of APMIP beneficiaries due to

implementation of APMIP. The result was in line with the findings of Shashidhara *et al.*, (2007)

### Cropping Intensity (C.I) (F)

As seen from table 6, 126.94 percentage of the increase in Cropping Intensity (C.I) observed as a result of MIS. Mono cropping pattern was observed in both Kharif and Rabi seasons before the implementation of APMIP. After the implementation of APMIP, as the water was saved through MIS, the beneficiaries had shifted to multi cropping pattern in three seasons including summer. Hence there is increase in Cropping Intensity (C.I).

### Generation of assets (G)

The data from table 7, indicates that 60.74 percentage increase in generation of assets observed due to implementation of MIS.

The probable reason for this trend might be that increased income and reduced cost of cultivation improved the self-sufficiency of the beneficiary farmers which helped them in generation of assets.

### Impact of APMIP

$$\text{Impact of APMIP} = \frac{[A + B + C + D + E + F + G]}{7}$$

$$\text{Impact of APMIP} = \frac{[97.98 + 46.49 + 52.16 + 30.84 + 65.26 + 126.94 + 60.74]}{7}$$

= 68.63 percentage

It is evident from the above mentioned computation of all the seven indicators that, there was 68.63 percentage of impact of APMIP observed among the beneficiaries.

Table 8, depicts that APMIP has shown medium (45.83%) level of impact followed by high (29.17%) and low (25.00%) levels of impact on the beneficiaries. APMIP beneficiaries might be very much satisfied with the output received due to adoption of MIS. They might have felt that the necessity of MIS in the context of water and labour scarcity. They also might have realized quality farm produce with high net income. On the other side, the farmers with less knowledge and poor adoption of CMP of MIS might have expressed less impact of APMIP.

Majority of the respondents had percentage increase in irrigated area (97.98%), percentage increase in yield level (46.49%), percentage decrease in labour usage (52.16%), percentage decrease in cost of cultivation (30.84%), percentage increase in income (65.26%), percentage increase in cropping intensity (126.94%), percentage increase in generation of assets (60.74%) and 68.63 percentage of impact of APMIP observed among the beneficiaries. Majority of the respondents had medium (45.83%) level of impact on the beneficiaries. The detailed study on APMIP enables in identifying the constraints faced by the respondents. Further, it is also useful to planners, policy makers, administrations and implementing agencies for effective implementation and monitoring of the project systematically.

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