Socio-economic impact of Irrigated Agriculture Modernization and Water Bodies Restoration and Management (IAMWARM) project in Pudukkottai District of Tamil Nadu

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ABSTRACT

The findings of study revealed that majority of the beneficiary farmers had medium level of socio-economic impact (46.67%), followed by high (28.33%) and low level of socio-economic impact (25.00%). Among non-beneficiary farmers, 70.00 per cent had low level of socio-economic impact, followed by medium (26.67%) and high level of socio-economic impact (3.33%).

Key words : Beneficiary farmers, Non-beneficiary farmers, Socio-economic impact.

The irrigation infrastructure that is the backbone of the irrigated areas is in considerable need of modernization and a new paradigm for operations and maintenance. This includes of irrigation canal systems restoration and revival of tanks etc., It is in this context that the "Irrigated Agriculture Modernization and Water-Bodies Restoration and Management (IAMWARM)" project has been formulated. It was introduced during the year of 2007 and funded by World Bank.

This Project has advocated Basin wise multidisciplinary approach in its functioning which not only favours productivity in agricultural and allied sectors but also expects to increase benefits to the farming community. Development of farming community results in the prosperity of the villages as most of the. It is important to ensure that the ultimate outcome of irrigated agriculture is food security and improved farm incomes. The World Bank in their observations, have suggested to highlight effectively the benefits of investment by each department and how the farmers shall stand benefited ultimately

The effectiveness of the project can be known if appropriate research studies are taken up. Keeping in view of this, present study was proposed to study the socio-economic impact of IAMWARM project on beneficiary farmers in the I-PHASE sub basin of Pudukkottai district of Tamil Nadu.

MATERIAL AND METHODS

A study was undertaken purposively in Pudukkottai district of Tamil Nadu. Four taluks were selected randomly and three villages from each taluk were selected randomly. Ten beneficiaries from each of the village were selected randomly using simple random sampling procedure, thus making a sample of 120 beneficiary farmers. Similarly, ten non-beneficiary farmers from each village of the two taluk, were selected randomly and thus making a sample of 60 non-beneficiary farmers. Ex-post facto research design was followed in this study. Data were collected by administering the pretested interview schedule to the beneficiary and non-beneficiary farmers covering all aspects of the socio-economic impact. Socio-economic impact was studied in terms of ten components and they include knowledge, adoption, yield, income, asset acquisition, water use efficiency, participation in the project activities, labour use, cost of cultivation, social participation. In order to know the significant difference between the beneficiaries and non-beneficiaries 'z' testwas employed.

RESULTS AND DISCUSSION
Socio-economic impact of the project
Socio-economic Impact: A cursory look at the Table 1 indicated that 46.67 per cent of beneficiary farmers had medium level of socio-economic impact, followed by high (28.33%) and low level of socio-economic impact (25.00%). Among non-beneficiary farmers, 70.00 per cent had low level

Table 1. Distribution of respondents according to socio-economic impact.

S. No	Category	Beneficiaries (n=120)		Non-Beneficiaries (n=60)		Difference ('Z' value)
		Freq	Per cent	Freq	Per cent	
1	Low (49-62)	30	25.00	42	70.00	22.9**
2	Medium (63-76)	56	46.67	16	26.67	
3	High (77-90)	34	28.33	2	3.33	

** - significant at 0.01 level of probability

of socio-economic impact, followed by medium (26.67%) and high level of socio-economic impact (3.33%). 'Z' – value (22.9) indicated that there was significant difference between beneficiary and non-beneficiary farmers.

The reason might be due to the effective implementation of the project and the effective transfer of technology by the project officials through diagnostic visits, frontline demonstrations, training programmes, fieldtrips, field days conducted could have resulted in more socio-economic impact. Whereas, non-beneficiary farmers with less literacy, less information source utilization, lack of training programmes and lack of knowledge on improved production practices might be the reason for having low socio-economic impact.

Knowledge:

Results presented in the Table 2 revealed that 52.50 per cent of beneficiary farmers had medium level of knowledge, followed by high (31.67%) and low level of knowledge (15.83%). Whereas large majority of non-beneficiary farmers, had low level of knowledge (96.67%), followed by medium (3.33%) and none was reported in high level of knowledge. There was significant difference between knowledge scores of beneficiaries and non-beneficiaries ('Z'-value – 10.78). The apparent reason might be that their higher level of information sources utilization, regular training exposure, economic motivation, scientific orientation made them to stand ahead than non-beneficiary farmers. This result was in agreement with the results of Manoj (2008).

Adoption:

From the Table 2 it was evident that 58.33 per cent of beneficiary farmers had medium level of adoption, followed by high (26.67%) and low level of adoption (15.00%). Incase of non-beneficiary farmers, all of them were under low adoption category (100.00%). Significant difference was noticed with 'Z' analysis (13.01) between beneficiary and non-beneficiary farmers. The reason for this trend might be due to the fact that the beneficiary farmers with more knowledge, scientific orientation, innovativeness and risk orientation could have led to more adoption than the non-beneficiary farmers. The non-beneficiary farmers being security minded, lack of training and inadequate knowledge in adopting improved practices could be the reasons for the above results. This finding was in tune with the results of Manoj (2008).

Yield:

Table 2 indicated that 42.50 per cent of beneficiary farmers had moderately increased yield, followed by slightly increased yield (29.17%), highly increased yield (28.33%) and none of them were in decreased and same level of yield. Incase of non-beneficiary farmers, 80.00 per cent indicated that yield was remained the same, followed by slightly increased yield (13.33%), decreased yield (6.67%) and no one was reported in moderately increased and highly increased categories. 'Z' value (21.32) indicated the significant difference between beneficiaries and non-beneficiaries in respect of yield component. This might be due to high level of knowledge, economic motivation, regular contacts with the project officials, high participation in field

Table2. Distribution of respondents according to components of socio-economic impact.

S.No	Category	Beneficiaries (n=120)		Non-Beneficiaries (n=60)		Difference ('Z' value)
		F	%	F	%	
1.	**Knowledge**					
	Low (27-49)	19	15.83	58	96.67	
	Medium (50-72)	63	52.50	2	3.33	10.78**
	High (73-95)	38	31.67	—	—	
2.	**Adoption**					
	Low (26-47)	18	15.00	60	100.0	13.01**
	Medium (48-69)	70	58.33	—	—	
	High (70-91)	32	26.67	—	—	
3.	**Yield**					
	Decreased (0.30t/ha)	—	—	4	6.67	
	Remained the same (3.75t/ha) Slightly	—	—	48	80.00	
	increased (0.12-0.30t/ha) Moderately	35	29.17	8	13.33	21.32**
	increased (0.31-0.49t/ha) Highly	51	42.50	—	—	
	increased (0.50-0.68t/ha)	34	28.33	—	—	
4.	**Income**					
	Decreased ('2,000)	—	—	8	13.33	
	Remained the same ('17,500)	12	10.00	42	70.00	12.71**
	Slightly increased('2000i -'21,000)	32	26.67	8	13.33	
	Moderately increased ('22,000-'41,000)	53	44.17	2	3.34-	
	Highly increased ('42,000- '61,000)	23	19.16	—	13.33	
5.	**Asset Acquisition**					
	Decreased ('3,000)	2	1.67	8	53.33	5.45**
	Remained the same ('58,000)	45	37.50	32	26.67	
	Slightly increased (' 3,000-'18,000)	33	27.50	16	6.67	
	Moderately increased ('19,000'34,000)	29	24.17	4	—	
	Highly increased ('35,000'50,000)	11	9.17	—	13.33	
6.	**Water use efficiency**					
	Decreased (12%)	—	—	8	46.67	11.78**
	Remained the same (300%)	—	—	28	40.00	
	Slightly increased (10% - 27%)	50	41.67	24	6.67	
	Moderately increased (28% -45%)	38	31.67	4	—	
	Highly increased (46% - 63%)	32	26.66	—	—	
7.	**Participation in the project activities**					
	Low (20 - 43)	32	26.67	—	—	-
	Medium (44-67)	49	40.83	—	—	
	High (68-91)	39	32.50	—	—	
8.	**Labour use**					
	Decreased (6)	54	45.00	4	6.67	3.09**
	Remained the same (28)	41	34.17	50	83.33	
	Increased (3)	25	20.83	6	10.00	
9.	**Cost of cultivation**					
	Decreased ('2,500/ha)	49	40.83	2	3.33	
	Remained the same ('20,000/ha)	59	49.17	25	41.67	8.92**
	Increased ('3,750/ha)	12	10.00	33	55.00	
10.	**Social participation**					
	Decreased (5)	25	20.83	14	23.33	
	Remained the same (18)	65	54.17	32	53.34	0.384NS
	Increased (7)	30	25.00	14	23.33	

** - Significant at 0.01 level of probability   NS – Non-significant

demonstrations and training programmes. Since non-beneficiary farmer were deprived of these facilities, such trend was noticed. This result was in accordance with the findings of Pandiselvei *et al.* (2010).

Income:

It is clear from the Table 2 that 44.17 per cent of beneficiaries reported moderately increased income, followed by slightly increased income (26.67%), 19.16 per cent reported highly increased income, 10.00 per cent reported that income remained the same and no one in decreased income. Among of non-beneficiary farmers, 70.00 per cent of them reported that the income remained the same, followed by equal number of farmers reported slightly increased and decreased level of income, 3.34 per cent of them came under moderately increased income category and no farmer were reported in highly increased income. 'Z' value (12.71) indicated the significant difference between beneficiaries and non-beneficiaries. It might be due to strong guidance of the project officials towards adoption of SRI method of rice cultivation to get increased income. Similar findings were reported by Veeendranath and Shailaja (2009).

Asset acquisition:

From the Table 2 it was evident that 37.50 per cent of beneficiary farmers reported that asset acquisition remained the same, followed by slightly increased level of asset acquisition (27.50%), moderately increased level of asset acquisition (24.17%), 9.17 per cent reported highly increased level of asset acquisition and 1.67 per cent reported decreased level of asset acquisition. Incase of non-beneficiary farmers, 53.33 per cent of famers reported that the asset acquisition remained the same, followed by slightly increased level of asset acquisition (26.67%), decreased level of asset acquisition (13.33%), 6.67 per cent reported moderately increased level of asset acquisition and no farmer was reported under highly increased level of asset acquisition. Significant difference was noticed with 'Z' analysis (5.45) between beneficiary and non-beneficiary farmers. This might be due to high level of knowledge, adoption of recommended practices and their increased level of yield & income motivated the beneficiary farmers to access to more asset acquisition that

was comparatively higher than the non-beneficiary farmers. This result was in accordance with the findings of Sridhar (2002).

Water use efficiency:
A glance of the Table 2 indicated that 41.67 per cent of beneficiary farmers indicated slightly increased water use efficiency, followed by moderately increased water use efficiency (31.67%), highly increased water use efficiency (26.66%) and none in decreased and same level of water use efficiency. Incase of non-beneficiary farmers, 46.67 per cent reported that the water use efficiency remained the same, followed by slightly increased water use efficiency (40.00%), decreased water use efficiency (13.33%), moderately increased water use efficiency (6.67%), and no one was reported in highly increased water use efficiency. 'Z' value (11.78) indicated the significant difference between beneficiaries and non-beneficiaries in respect of water use efficiency. It might be due to adequate knowledge over the technology and adoption of wetting and drying method of irrigation of rice cultivation prepared them to use the water scrupulously. Similar findings were reported by Pandiselvi (2010).

Participation in the project activities:

From the Table 2 it was evident that 40.83 per cent of beneficiary farmers had medium level of participation in the project activities followed by high (32.50%) and low level of participation in the project activities (32.50%). Incase of non-beneficiary farmers, no one participated in the project activities. It could be inferred from the above results that medium and higher level of participation of farmers in the project activities might be due to the intensive use of participatory techniques, planning based on felt needs, and project activities directly related to farmers and hence this result was noticed. This result was in accordance with the findings of Umamaheswara (2009).

Labour use:

It was apparent from the Table 2 that 45.00 per cent of beneficiary farmers reported decreased labour use, followed by same level of labour use (34.17%) and increased level of labour use (20.83%). Incase of non-beneficiary farmers, 83.33 per cent had same level of labour use, followed by

increased level of labour use (10.00%) and decreased level of labour use (6.67%). 'Z'- value (3.09) clearly indicated that there was significant difference between beneficiaries and non-beneficiaries. It might be due to reduced use of labour in SRI cultivation compared to conventional rice cultivation. Similar findings were reported by Yang and Suon (2004).

Cost of cultivation:
The Table 2 that 49.17 per cent of beneficiary farmers reported that cost of cultivation remained the same, followed by decreased level of cost of cultivation (40.83%) and increased level of cost of cultivation (10.00%). Incase of non-beneficiary farmers, 41.67 per cent had same level of cost of cultivation, followed by increased level of cost of cultivation (55.00%) and decreased level of cost of cultivation (3.33%). There was significant difference between beneficiaries and non-beneficiaries with regard to cost of cultivation ('Z'-value – 8.92). This might be due to adoption of SRI method of cultivation led them to use less seed rate, optimum use of inputs that resulted in decreased cost of cultivation than that of non-beneficiary farmers. This result was in accordance with the findings of Pandiselvi (2010).

Social participation:
From the Table 2 it was evident that more than half of beneficiary farmers reported that social participation remained the same (54.17%), followed by increased level of social participation (25.00%) and decreased level of social participation (20.83%). Incase of non-beneficiary farmers, 53.34 per cent reported that social participation remained the same, followed by equal number of farmers under increased and decreased level of social participation category (23.33%). 'Z'- value (0.384) indicated that there was no significant difference between beneficiaries and non-beneficiaries. The plausible reason for this trend might be due to the fact that lack of interest and time, non-attractiveness of undertaken by the organization, lack of perceived benefits, lack of awareness about various social organization and their activities and local political hinder them to participate actively in different social organizations. This finding was in tune with the results of Mangala (2008).

CONCLUSION
The findings clearly revealed that significant impact of IAMWARM project on beneficiary farmers in terms of knowledge, adoption, yield, income, asset acquisition, water use efficiency, participation in the project activities, labour use, cost of cultivation and non-significant difference was reported in respect of social participation and therefore the project official need to educate the farmers on the benefits of social participation.

LITERATURE CITED

Mangala B 2008 Impact of Integrated Farming System on socio-economic status of Bharatiya Agro-Industries Foundation (BAIF) Beneficiary Farmers. *M.Sc. (Ag.) Thesis*. University of Agricultural Sciences, Dharwad.

Manoj A 2008 Impact of Krishi Vigyan Kendra on farmers Srikakulam district of Andhra Pradesh. *M. Sc.(Ag.) Thesis*. Acharya N G Ranga Agricultural University, Hyderabad, India.

Pandiselvi T, Veeraputhiran R, Ganesaraja V, Ponni priya J and Pandian B J 2010 Productivity, water use efficiency and economics of system of rice intensification in Sivagangai district of Tamil Nadu. *International Journal of Agricultural Sciences*. 6 (1): 138-140.

Sridhar K 2002 An evaluative study of watershed programme in Pavagada taluk of Tumkur district in Karnataka. *M. Sc.(Ag.) Thesis*. University of Agricultural Sciences, Dharwad, Karnataka, India.

Umamaheshwara M S 2009 A study on community participation in irrigation tank management in Haveri district in Karnataka. *M. Sc. (Ag.) Thesis*. University of Agricultural Sciences Dharwad, India.

Veerendranath G and Shailaja A 2009 Impact of Watershed Development Programme in Mahaboobnagar District of Andhra Pradesh. *Journal of Extension Education,* 22 (2): 4197-4203.

Yang S K and Suon S 2004 An assessment of ecological system of rice intensification SRI in Cambodia in wet season. *CEDAC Field Document*.