

EVALUATION OF FARMERS' PARTICIPATION UNDER COMMAND AREA DEVELOPMENT PROGRAMME IN KERALA

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Abstract: Farmers' participation through Water Users' Associations (WUAs) under Command Area Development Programme (CADA) in Malampuzha Irrigation Project, Kerala State has been quantified. The study has shown that only about 30 per cent of participatory activities envisaged for WUAs are being undertaken by farmers and hence participation is low. Most of the activities undertaken are related to irrigation water management. Activities such as consolidation of landholdings, group farming, adoption of suitable cropping pattern etc are not carried out by most of the WUAs. Farmers were found to contribute money / labour for maintenance of concrete field channels constructed by CADA in order to ensure water availability. However, a system of farm channels for carrying out scientific on-farm water management through channel to field irrigation and Rotational Water Supply (RWS) does not exist for majority of the WUAs. Location (reach) of WUAs on the canal network was not found to influence farmer participation since water scarcity was not a problem in the different reaches. However, landholding size was found to influence participation.

Key words: CADA, farmers' participation, Malampuzha Irrigation Project, Water Users' Associations

INTRODUCTION

Irrigated agriculture holds the key for increasing crop productivity for which a number of irrigation projects have been commissioned in India during the last fifty years. In Kerala, there are 10 completed and another 12 partially commissioned major / medium irrigation projects catering to a gross irrigated area of 2.65 lakh ha. However, it is seen that there is a wide gap between the irrigation potential created and that utilized under these projects. This has been mainly attributed to improper / inefficient water management in the command areas of irrigation projects, resulting in wastage and inequitable water distribution among farmers both in terms of quantity as well as time. Farmers' participation has been found to be a solution to problems of poor water management (Cheong, 1971; Singh, 1989). This has been envisaged under Command Area Development Programme (CADA) in the State (CADA, 1996).

MATERIALS AND METHOD

Study Area: The study was carried out among farmers of WUAs registered under CADA in Malampuzha Irrigation Project, Palghat District, Kerala State. This project irrigates an area of 20553 ha. CADA has organized 444 WUAs under this irrigation project (CADA, 1997). The sample contained 140 numbers of marginal farmers having landholding less than 1 ha, 140 numbers of small farmers having landholding 1-2 ha and 120 numbers of big farmers having landholding more than 2 ha.

The study was carried out through (a) Personal interview among farmers using a schedule and (b) group discussions with farmers and CADA officials. The dependent variable Farmer Participation Index (FPI) of WUAs was quantified based on the method suggested by Singh (1992). Accordingly, a set of 16 questions related to participatory activities envisaged under WUAs of CADA (Anonymous, 1991) was prepared with responses - Yes/No with scores of 1 and 0 respectively or always/sometimes/ never with scores of 1, 0.5 and 0 respectively. Each of the questions was assigned a weight depending on the rank assigned depicting its relative importance as a measure of participation. FPI was worked out using the following formula:

$$FPI = \sum_{i=1}^N Pi/N \text{ where } Pi \text{ is the participation score of } i^{\text{th}} \text{ farmer defined, } N = \text{number of farmers}$$

$Pi = \sum_{j=1}^K Wij Xj$ where Wij is the weight assigned to the j^{th} question asked to the i^{th} farmer, Xj is the score obtained by the i^{th} farmer for the j^{th} question and $K = \text{number of questions}$. The possible range of FPI under this study was from 0 to 100. Data collected through the interview schedule was analyzed using percentages and chi-square tests.

RESULTS AND DISCUSSION

Basic details of the sample farmers show that they are mostly landowners who are primarily farmers by profession, receiving irrigation wa-

ter on a timely, adequate and equitable manner for their entire cultivated area.

Table 1. Classification of farmer participation (FP) score

FP score range	Classification	Farmers (%)
0-25	Very Low	33.6
26-50	Low	60.6
51-75	Moderate	5.8
>75	High	Nil

Table 2. Farmer Participation Index (FPI) of Water Users' Associations (WUAs)

WUA	FPI of WUAs at different canal reaches		
	Head	Middle	Tail
1	35.2	30.6	30.6
2	47.5	32.2	32.0
3	30.2	21.6	39.2
4	21.7	30.1	36.3
5	24.5	24.8	28.4
6	21.5	41.6	43.6
7	33.1	25.7	38.6
8	23.2	27.7	28.3
9	26.2	33.8	31.8
10	33.2	25.1	23.2
11	34.5	32.1	29.0
12	42.5	41.8	27.7
13	28.0	41.9	30.4
14	-	26.7	-
15	-	27.8	-
16	-	31.9	-
17	-	36.3	-
Mean	30.9	31.5	31.9
Mean over all reaches 31.5			

Farmer participation (FP) score classification

FP scores were classified as suggested by Singh (1992) and are shown in Table 1. Accordingly, 33.6% of farmers possess a very low score (0-25 score range); 60.6% have low score (26-50 range); 5.8% have moderate score (51-75 range), and none of the farmers has high score (FP score >75). This implies that more than 90% of farmers possess a very low to low FP score in the range of 0 to 50.

Farmer participation index (FPI)

FPI worked out based on FP scores of the 43 WUAs studied was found to lie in the range of

21.5 to 47.5 with a mean value of 31.5 (Table 2). The mean FPI of WUAs worked out for head, middle and tail reaches of canals was found to be 31.0, 31.5 and 32.0 respectively. From the above, it may be inferred that only about 30 per cent of the activities envisaged for WUAs under CADA are being actually undertaken by farmers. This is further supported by CADA's observation that the functioning of WUAs in most of the projects is not satisfactory and their performance is poor (CADA, 1997).

Participatory activities

The participatory activities undertaken by farmers are given in Table 3. Only 6 out of 16 activities listed were found to be undertaken by more than 50% of farmers. It may also be noted that most of these activities are related to irrigation water management in some way or the other. The main motivating factor for the participatory activities viz., contributing money/labour for maintenance of field channels constructed by CADA (reported by farmers during group discussions) was the improvements in water availability due to these channels. However, improvement in on-farm water management below the outlets (one of the major objectives behind formation of WUAs by CADA) was found to be restricted to concrete field channels constructed by CADA up to a particular length below the outlets, with majority of farmers still practicing field to field irrigation. CADA norms provide money for concrete lining of irrigation channels up to 20% length only. Below this, farmers are expected to construct farm channels for carrying out channel to field irrigation and Rotational System of Water Supply (RWS). However, majority of the WUAs have not implemented the above activity as is seen from the participatory activities viz., item No.8, 9 and 16 shown in Table 3. The results of the study, therefore, indicate the absence of the required infrastructure for adopting scientific water management. An evaluation study by CADA (1997) also shows that most of the WUAs in Kerala do not have any contribution in distribution of irrigation water among farmers. The relevance of implementing RWS by farmers' associations has been highlighted by Jayaraman (1981). Other activities envisaged for WUAs such as land consolidation,

Table 3. Participatory activities of farmers under WUAs in Malampuzha Irrigation project (n = 400)

Sl. No.	Activity	% of participating farmers*
1	Planning on-farm development works undertaken through WUA	NIL
2	Attending meetings of WUA	83.0
3	Discussing problems on irrigation water management with CADA officials	35.0
4	Discussing the above with fellow farmers	97.0
5	Discussing one's knowledge / experience on irrigation water management with fellow farmers	98.0
6	Discussing the above with CADA officials	33.0
7	Attending training organized by CADA	17.0
8	Contributing money for construction of field /farm channels	1.5
9	Contributing labour for the above	1.0
10	Contributing money for maintenance of field channel constructed by CADA	63.0
11	Contributing labour for maintenance of the above	56.0
12	Consolidation of fragmented landholdings	NIL
13	Adopting suitable cropping pattern under the WUA	5.0
14	Implementing group farming system	15.0
15	Conflict resolution between members through WUA	53.0
16	Adopting rotational water supply (RWS)	NIL

*Rounded off to nearest decimal

adoption of suitable cropping pattern, group farming etc. are meant to reduce cost of cultivation as well as improving crop productivity. However, they are not being undertaken by most of the WUAs. From discussions carried out with farmers, it was understood that crop productivity has not increased significantly due to the activities of WUAs. The average yield of rice reported by farmers was 3000 kg ha^{-1} when compared to a possible yield potential of about 5000 kg ha^{-1} for high yielding varieties of irrigated rice (Anonymous, 1994). The above trend on yield of rice observed in the study area can be attributed to non-existence of group farming and associated participatory activities as well as scientific on-farm water management practices. It can be also seen from Table 3 that about 65% of farmers do not discuss one's knowledge / experience / problems related to irrigation management with CADA officials. Also, only 17% of farmers have attended training programme of CADA. Farmers also observed during group discussions that CADA has not organized sufficient training programmes for farmers. CADA (1997) has also reported that 75% of farmers were of the opinion that the schemes of agricultural wing, of which training is an important component, have not been implemented in their command areas. It may

therefore be inferred that the extension machinery of CADA has not been able to cater to the requirements of farmers, both in terms of interaction with WUAs and conducting training for farmers. From the above discussion, it may be concluded that farmers are not carrying out many of the participatory activities envisaged for WUAs under CADA and hence the WUAs have a low FPL

Impact of location of WUAs and landholding size offarmers on participation

In order to determine the statistical significance of any empirical relationship between location (reach) of WUAs on canal and landholding size of farmers on their level of participation, chi-square tests were conducted. For this, FP scores were classified as high, medium and low based on mean plus or minus standard deviation. The results are presented in Table 4 and 5. Table 4 shows there is not much variation in the percentage of farmers falling within each range of (high / medium / low) FP scores at different canal locations. Further, based on group discussions with farmers, it has been observed that tail end WUAs in the study area do not face any significant water availability problem. CADA (1997) has also reported that canal water is

Table 4. Physical location (reach) of WUAs and its impact on farmer participation score under Malampuzha Irrigation Project (n=400 farmers)

Canal reach	Farmers (%) with scores		
	High	Medium	Low
Head	12.7	72.0	15.3
Middle	15.8	69.7	14.5
Tail	13.6	72.8	13.6
Total sample	13.8	71.8	14.4

X²" not significant

Table 5. Landholding size and its impact on farmer participation score (chi-square test) under Malampuzha Irrigation Project (n = 400 farmers)

Landholding category	Farmers (%) with scores		
	High	Medium	Low
Marginal	3.7	94.0	2.3
Small	14.5	73.3	12.2
Big	15.6	72.7	11.7
Total sample	11.2	80.2	8.6

$\chi^2 = 24.763$ (significant at 1% level.); df for marginal / small / big = 4

sufficient for 91 % of farmers in Malampuzha. The non-significance of chi-square test for the effect of physical locations of WUAs can be due to non-scarcity of water at all locations. The above test indicates that farmer participation is not influenced by physical location of WUAs on canal network. However, landholding size is seen to influence farmer participation as it is evident from the significance of chi-square test (Table 5). It can also be seen from Table 5 that there is considerable variation in percentage of farmers falling within each range of FP scores in the case of marginal farmers when compared to the other two groups of farmers. This may be the reason for the significance of chi-square test. It was also observed from the study that the mean participation score of big farmers is comparatively higher than the other two groups. The office bearers of many WUAs were mostly big farmers, and hence higher participation in the activities of the WUA. Further, under Kerala conditions, where rice cultivation is not very profitable especially for the small sized landholdings, it is only logical to expect big farm-

ers to be more interested in participating in WUA activities.

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