



Short communication

## Factors influencing farmer participation in irrigation management

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### Abstract

Farmer participation is critical to improve on-farm water management and crop productivity under the Command Area Development programmes. This paper reports the results of a study in the Cheerakuzhy irrigation project of Kerala, in which, farmer participation through water-user associations was measured, and it was linked to various socio-psychological and situational characteristics of the participants. Multiple linear regression analysis reveals that adequate, timely and equitable availability of water is cardinal to ensure effective farmer participation in the community irrigation projects.

**Key words:** Farmer participation index, socio-psychological characteristics, water-user associations

Lack of proper on-farm development works in the command areas of irrigation projects, often results in poor water use efficiency at the farm-level. To overcome this problem, the Government of India introduced the concept of Command Area Development and established a number of Command Area Development Authorities (CADA) throughout the country. In Kerala, there are 14 irrigation projects covered under the CADA programme. In general, the CADA programmes aim at improved on-farm water management and adoption of scientific agricultural practices to enhance agricultural productivity through farmer participation. The registered water user associations (WUAs) are thought to be critical links in the CADA activities. They are generally responsible for the construction/maintenance of field channels below the outlets, timely and equitable water distribution among the farmers, prevention of unauthorised and unfair use of water, besides undertaking group-farming and rotational water supply activities (CADA, 1997). Coincidentally, 3365 WUAs have been registered under CADA in different irrigation projects of Kerala. Farmer participation in irrigation management, however, is a behavioural manifestation. Several attempts were made to identify the personal/community characteristics that

influence the adoption process (Bora, 1989; Parikh and Shah, 1994). This paper reports the social and situational characteristics of farmers in the Cheerakuzhy irrigation project that influences the extent of their participation in the WUA activities.

The study was carried out during 1996 among the farmers of the WUAs registered under CADA in the Cheerakuzhy irrigation project, Thrissur, Kerala. The project has a command area of 978 ha, with 32 WUAs originally registered under it (CADA, 1997). Respondents (100) were members of six WUAs with valid registration, and were personally interviewed using a structured schedule. The socio-psychological determinants and the situational factors (independent variables) considered are listed in Table 1. The dependant variable, namely, Farmer Participation Index (FPI) was calculated as suggested by Singh (1992). Relationship between the independent variables and the farmer participation index was worked out using multiple regression (linear model) in MSTAT-C (ver. 1.41).

A comparison of the data presented in Table 1 show that the socio-psychological and situational variables

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(in total 13) explained about 44.5% of the variations in farmer participation. In particular, two socio-psychological characteristics—social participation and attitude towards participation, and two situational variables—availability of irrigation water and location of land on canal network, exerted a significant effect on farmer participation. Of these, irrigation water availability had an overwhelming influence (regression coefficient of 7.56). This is logical, since water availability in terms of adequacy, timeliness and equitability would be the main motivating factor for farmers to undertake irrigated farming and to involve in the activities of WUAs. Chackacherry (1993) also reported a similar pattern for Neyyattinkara irrigation project (Thiruvananthapuram district).

With regard to the other significant situational variables, location of land on canal network had a regression

coefficient of 3.33 (Table 1). In this respect, Chandran et al. (1998) noted statistically significant differences in farmer participation between the head- and tail-reaches of the canals in Malampuzha irrigation project. Generally, farmers located at the head-reaches of irrigation canals are in a better position, compared to those at the middle- and tail-reaches. As expected, farmers at the tail-reaches experienced water scarcity problems. Ensuring adequacy, timeliness and equity of irrigation water, therefore, plays a major role in motivating the farmers to participate effectively in WUA activities. Furthermore, socio-psychological variables, namely, social participation and attitude of the individuals significantly influenced the extent of participation. This in turn, calls for evolving appropriate extension strategies to create attitudinal changes and awareness on scientific water management among the WUA participants.

Table 1. Multiple regression analysis of variables influencing farmer participation

Variable	Regression coefficient
<i>Socio-psychological</i> <sup>1</sup>	
Achievement motivation	2.427
Age	-0.049
Attitude towards participation through WUA	0.738*
Attitude towards scientific agricultural management	0.586
Communication skills	-0.474
Education	1.379
Farming experience	0.125
Knowledge on scientific agricultural management	-0.316
Level of aspiration	-0.444
Managerial efficiency	0.027
Mass media participation	0.007
Orientation towards competition	0.185
Social participation	1.574**
<i>Situational</i> <sup>2</sup>	
Irrigation potential	0.359
Irrigation water availability	7.567*
Location of land on canal network	3.332*
Occupation	5.414
Tenancy status	0.044

$r^2=0.445$ ;  $F(0.01)=3.83$ ; \* Significant at 5% level; \*\* Significant at 1% level

<sup>1</sup>For methodological details see Chandran et al. (1998) and the references cited therein.

<sup>2</sup>The situational variables were scored as follows: Irrigation potential as the ratio of irrigated to total paddy area (%); Irrigation water availability: timely availability, adequate quantity and equity (separately scored with 2 for 'available' and 1 for 'not available'); Location of land on canal network: head- (score = 3), middle- (score = 2) and tail-reaches (score = 1); Occupation: farmer (score = 2), other (score = 1) and Tenancy status: owner cultivator (score = 2), tenant (score = 1).

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