1. INTRODUCTION

1.1 IRRIGATION MANAGEMENT

Out of the 766 million population in India, 77 per cent live in rural areas; out of this population, 67 per cent depend on agriculture for their livelihood. Since water is the most important input in raising and stabilising agricultural productivity, huge investments have been made for increasing the irrigation potential. More than Rs.100,000/- millions have been spent on development of irrigation during 1951-86. As a result of these efforts, irrigation potential has considerably increased. The Irrigation area has gone up from 22.6 million hectares in 1951 to 68 million hectares in 1986. However, the desired level of output has not been achieved from the created potential. With regard to rice, which is the main irrigated crop, as against the expected yield of 3 to 4 tonnes per hectare, the average yield recorded has been 1.7 tonnes per hectare during 1986. It is noteworthy that the yield in South Korea, Japan and China has been 4.4, 3.8 and 3.6 tonnes per hectare, respectively.

After independence, 10 major/medium irrigation projects have been fully commissioned in Kerala, irrigating a net area of 77085 hectares (150000 hectares gross) of paddy and 10 other major/medium irrigation projects have been partially commissioned, presently irrigating a net area of 78670 hectares (183087 hectares gross). The partially commissioned projects are expected to cater to a net area of 212672 hectares (net) and 450434 hectares (gross) after fully commissioning. Figure 1 depicts the major/medium irrigation projects and their command area in Kerala. In spite of the improved irrigation facilities and agricultural practices, the total production of rice has not
Fig. 1: Major/Medium Irrigation Projects & Their Command Area in Kerala
increased. Analysis of the data collected from farmers’ field has revealed that irrigation has contributed to an increase of only 2.2 quintals of rice per hectare.¹

With the steadily growing population in India, expected to reach 950 millions by the year 2000 AD, there is a demand of 250 million tonnes as against 150 million tonnes produced at present. Since there is a physical limitation of cultivable land and water for irrigation, attention has to be given to the productivity of land and water.² This calls for efficient utilisation of irrigation potential.

Irrigation projects in India are constructed, operated and maintained by the Government. The projects are expected to deliver water to its command areas through a network of distribution system. Farmers are expected to apply the water efficiently for optimising production.³ But, until recently, irrigation management is considered as the responsibility of the Government. Farmers are not given an opportunity to involve in the irrigation management. This has ultimately resulted in inefficient use of the available irrigation potential.⁴

It has now been recognised that canal irrigation will be possible only when the distribution system upto cultivators’ field is maintained properly. It is proved that the Government machinery is not capable of maintaining the system without the active involvement and support of farmers. As observed by Uphoff et.al. (1985)⁵ and Lowdermilk et.al. (1987)⁶, farmers acting as groups, in cooperation, will be able to bring social pressures on each other for improved maintenance and management of the system.
1.2 PARTICIPATION OF FARMERS

Farmer managed traditional irrigation systems are existent in various parts of India for hundreds of years. Diversion of water from rivers and streams, tanks, ponds, wells etc., are among the commonly found farmer managed systems.¹⁰

Concern for the participation of farmers in canal irrigation grew when the project administrators realised the wide gap between irrigation potential 'created' and 'utilised'.¹¹ Success stories from the South East Asian Countries like, Philippines, Indonesia and Thailand, where participation of farmers in irrigation management increased productivity even upto 300 per cent,¹² has given inspiration to the project administrators. Thus Command Area Development Authorities (CADA) were set up with the main aim of "upgrading the outlet command with suitable onfarm development works, so as to allow for an even spread of water in the entire irrigation command."¹³ In order to achieve the objectives, attempts have been made to ensure the participation of farmers through the establishment of outlet based water user associations, pipe committees, pani panchayats, kolaba samitis, etc., in the command areas.

Kerala has no reported tradition in the management of irrigation system by farmers. This may be due to the rich water resources available in Kerala. Although Kerala accounts for only 1.2 per cent of the land surface of the Country, her water potential accounts for 5.4 per cent.¹⁴ Organised efforts in the participation of farmers in irrigation management in the State started with the establishment of the Command Area Development Authority in 1985. The command area development activities as such were initiated in Kerala in 1980. Till March 1991, a total of 2031 outlet based farmer associations have
been organised by CADA in the command areas of the 10 completed projects,\textsuperscript{15} with the aim of participating the farmers in irrigation management, especially in the below outlet level.

The experiences show that as long as farmers actively participate in irrigation management, there is a marked improvement in water utilisation and productivity. According to Patil and Datye (1987)\textsuperscript{16} and Singh (1990)\textsuperscript{17} area under irrigation as well as the number of farmers who gained access to irrigation has increased as a result of involving farmers in the management of irrigation systems. Visible reduction is found in disputes related to water. Moreover, supply of water is assured and maintenance of canals and control structures is made easy.

As shown by certain evaluation works carried out in the Country, in spite of all the benefits, the enthusiasm of farmer participation in the management of irrigation is lost with the passage of time. In contrast to the cooperation shown for the smooth functioning of the traditional irrigation systems, the farmers express reluctance to take any responsibility for the management of the Government administered irrigation projects.\textsuperscript{18} It has been found that most of the farmer associations formed in Kerala by CADA have not been functioning even in its initial years.\textsuperscript{19} Seven Water User Associations formed as part of the Operational Research Project (1979-88) of the Centre for Water Resources Development and Management (CWRDM) in the command area of Kuttiyadi Irrigation Project, have been active in the initial years. However, these associations withered away with the withdrawal of the ORP staff from the area.\textsuperscript{20}
Experts who have studied the process of modernisation says that, "a people who have a high rate of literacy, political awareness and frequently been exposed to the mass media debate on issues concerned with their own personal and social development will have a better chance to be modernised because they will be better organised themselves for collective action."\textsuperscript{21} Kerala fulfils all the above conditions and therefore, this State should have been a fertile land for collective action in the field of irrigated agriculture. In practice, however, it is not so.

In the light of the experiences highlighted in the above paragraphs, the necessity for studying the different aspects of participation of farmers in irrigation management has been recognised. Such a study is expected not only to diagnose the present problems connected with participation of farmers, but also to point out certain measures to improve the participation and to achieve better productivity through efficient irrigation. The study has taken into account all the location specific characteristics which are relevant in the Kerala context.

1.3 RELEVANCE OF THE STUDY

Irrigation is a human activity which is rooted in social interdependence and involves interaction of individuals in groups (engineers, agronomists, farming communities, input agencies, etc.). Therefore, Sociology, which studies human groups and group relations and behaviour, has a very important role to play in the success of irrigation.

A detailed study on the sociological reasons for the present low level of participation of farmers in irrigation management has been made.
Participation of farmers in irrigation management is a prerequisite for the success of irrigation and the present study is expected to throw light on the constraints pertaining to interaction of various groups involved in irrigation. The study is also envisaged to enrich our knowledge on our society. No exhaustive sociological study has so far been reported on irrigation management with special reference to the overall performance evaluation of CADA, as well as the organisational and procedural aspects of irrigation management in India. The present study is an attempt to fill the gap and it is expected to be highly useful for ensuring participation of farmers in the irrigation projects of Kerala, from which State no such study has been reported so far.

The study of the behavioural pattern of the farmers in the command area of the irrigation projects of Kerala is relevant, especially in the event of increasing trend of fragmentation of land, existing system of part-time cultivation and phenomenal increase in the cost of cultivation.

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