3. THE PROCEDURE

In this Chapter, we will briefly present the main objectives of this study, with the definitions of concepts and variables leading to the formulation of the research hypothesis. Description about the sample, universe and tools for data collection is also made.

3.1 OBJECTIVES OF THE STUDY

The main objective of the study is to look into the various aspects of participation of farmers in irrigation management. It specifically aims at,

(i) finding out the factors that hinder participation of farmers in irrigation management; and

(ii) suggesting measures for ensuring participation of farmers in irrigation management.

3.2 DEFINITION OF CONCEPTS

3.2.1 Irrigation Management

Irrigation holds the greatest potential for increasing the agricultural production and therefore, irrigation management becomes the most important process for achieving it. Irrigation management has given stress to 'adequate control of allocation of available supplies, reliability of water delivery at the farm level and equity in distribution within the entire command'.¹ Previously
it was conceived as the management of the main system - reservoir and water courses up to the outlet point, which has been found not yielding the desired productivity. The concept of involving farmers in irrigation management has been emerged with the shift in thinking. Establishment of the Command Area Development Authority (CADA) is basically to ensure improved productivity from the irrigation systems through participation of farmers in irrigation management. In the present context, irrigation management is referred as the management of the whole system, from the source of water up to the farm level, with a view to ensure adequate, reliable and equitable distribution of water within the command.

3.2.2 Participation of Farmers

It is widely accepted that farmers who are the end users of irrigation water, are the key persons deciding the success of any irrigation system and their participation in its management is considered as a prerequisite for increasing the irrigation efficiency. Participation is a type of interaction, which is contributed through the mutual adjustment and orientation of behaviour of different individuals, basically for attaining certain goals. Participation of farmers in irrigation management is denoted as the involvement of the farmers in all the activities concerned with Irrigation and irrigated agriculture, with a genuine interest of attaining the declared goals. Participation can either be direct or indirect, depending on the type of involvement required. Generally it is considered necessary in decision making, implementation and sharing of benefits. As all the farmers in an area cannot directly participate, participation through farmer groups or associations are mainly intended.
3.2.3 Command Area

Command area is the land benefited by the irrigation water as may be notified by the Government. It is otherwise known as ayacut. The land benefited by the water from a branch canal and its water courses is referred as branch canal command and the land benefited by the water released through an outlet from the branch canal and distributed through field channel and other water courses, is referred as outlet command. The branch canal and outlet commands are divided into three reaches, namely, Head, Middle and Tail, based on the location of the land holdings within their commands. That portion of the command which falls within the initial one-third of the branch canal or outlet water course is denoted as the Head reach, and the portion which falls within the last one-third of the branch canal or outlet water course is denoted as the Tail reach. The portion in between is the Middle reach. The schematic representation of the branch canal command, outlet command and different reaches are provided in Figure 2.

3.2.4 Outlet

Outlets are openings constructed by the Government in an irrigation system through which water is delivered to a block of land, the extent of which ordinarily does not exceed 40 ha.\(^1\) Outlets are called in different names like, pipe outlet, sluice and spout.

3.2.5 Farmer Association

According to the Kerala Command Area Development Act 1985, farmers benefited by one or more outlets in a major, medium or minor irrigation
Fig. 2. SCHEMATIC REPRESENTATION OF A BRANCH CANAL COMMAND
projects are expected to organise farmer associations and to be registered under the Societies' Registration Act. The Command Area Development Authority has altogether formed 2031 farmer associations till March, 1991, in the ten completed projects of Kerala. In the Neyyar Project it has formed 316 farmer associations.\(^3\) These associations form the base level structure of the three-tier system, instituted by CADA, for ensuring the participation of farmers in irrigation management. Canal Committee, which is constituted of officials of concerned agencies and presidents of farmer associations in a major branch canal command, is the second tier and the Project Committee which is constituted of officials of concerned agencies and representatives of canal committees in the Project area, is the upper tier. In the context of the present study, farmer association is referred as the associations of farmers formed by CADA.

3.3 IDENTIFICATION OF VARIABLES

The main variables under investigation in our study, as far as the farmer population is concerned, are location of their land holdings within command area, occupational features (farming nature), income status, land holding status and community. Since we did not find any significant differences in the opinions of males and females, and the less educated and more educated we have not considered them as relevant variables in our study. Divisions of main variables are furnished below:

<table>
<thead>
<tr>
<th>Location of Land Holdings</th>
<th>Head Reach</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Middle Reach</td>
</tr>
<tr>
<td></td>
<td>Tail Reach</td>
</tr>
</tbody>
</table>

Refer 3.2.3 and Fig.2

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**Occupation Feature**  
(Farming Nature)

<table>
<thead>
<tr>
<th>Full-Time</th>
<th>Part-Time</th>
</tr>
</thead>
</table>

**Land Holding Status**

| Lower Group (Farmers with land below 0.4 ha) |
| Middle Group (Farmers with land between 0.41 and 1.0 ha) |
| Upper Group (Farmers with land 1.01 ha and above) |

**Income Status**

| Low Income Group |
| Middle Income Group |

1) Thatched house  
ii) One bed room  
iii) Below 0.2 ha land  
iv) No drinking water source  
v) No equipment/appliance  
vi) No vehicle  
vii) No other earning member

1) Tiled/Terraced house  
ii) Not below 2 bed rooms  
iii) Between 0.21 to 1.0 ha land  
iv) Owns drinking water source  
v) TV/Radio/Mixy/Refrigerator(at least one)  
vi) Two-Wheeler or Cycle  
vii) Have another earning member

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In order to assure the accuracy of the data on income, an indirect method has been resorted to. Instead of enquiring about their income directly, their assets have been taken into consideration to arrive at their income level. The assets considered include the type of house, extent of land, equipment/household appliance, and vehicle owned. One will be included in an income group when he owns/satisfies at least five items in the list of seven furnished against each group.
High Income Group
   i) Tiled/Terraced house
   ii) 3 or more bed rooms
   iii) Above 1.01 ha land
   iv) Drinking water source with pumping system
   v) TV/Radio/Mixy/Refrigerator/Telephone (at least two)
   vi) Two, three or four Wheeler
   vii) Have another earning member

Community
   ; Nair Community
   Nadar Community
   Other Communities

As far as officials are concerned, we have taken the agency and discipline to which they belong into consideration. Their divisions are furnished below:

Agency : Irrigation Department (ID)
   Command Area Development Authority (CADA)
   Centre for Water Resources Development and Management (CWRDM)

Discipline : Engineering
   Agriculture
   Other

3.4 HYPOTHESIS

1. The intensity of participation of farmers in irrigation management is directly proportional to the assurance of water supply.
2. Continued presence of the officials or 'catalyst' is required for the sustenance of participation of farmers.

3. More the material incentives offered, more will be the participation of farmers.

4. Cooperation among the farmers for participating in irrigation management is incapacitated by the jealousy prevalent among them.

5. Religious/ caste/ community differences among farmers weaken participation of farmers.

6. Political differences weaken participatory activities of farmers.

7. Full-time farmers are more committed to participation of farmers in irrigation management, than the part-time farmers.

3.5 RESEARCH DESIGN

When we consider the nature of the topic and the extent to which it is explored, an exploratory as well as descriptive design seems to be suitable for this study. Organised efforts for participating the farmers in irrigation management activities in India have started less than two decades back only. The efforts in Kerala is only a decade old. Even though some attempts have been made in some parts of the Country to describe the participation of farmers in irrigation management, no full scale attempts have been made to diagnose the dynamics of it, especially with a sociological perspective. No study has been reported in Kerala in this line. Therefore, ours is a humble attempt to study the participation of farmers and to find out the factors that obstructs its occurrence.

3.6 UNIVERSE AND SAMPLE

The universe of the study is the farmers and officials of all the command areas of the irrigation projects of Kerala State. But the specific
population selected for our study is the farmers and officials of the command area of the Neyyar Irrigation Project. Two samples have been selected for the purpose of the study. The first sample consists of 281 farmers, randomly selected from the two branch canal commands of the Right Bank Main Canal of the Neyyar Project, namely, Chowara (136 farmers) and Vizhinjam (145 farmers). The second sample consists of 32 officials responsible for the irrigation management activities in the area.

The sample of farmers is representative of not only the two branch canal commands selected, but also of the entire command of the irrigation project considered. The irrigation project considered is also expected to be representative of most of the irrigation projects of Kerala, so that the results of the study will have wider applications.

The command area of Neyyar Irrigation Project is representative of the commands of other irrigation projects of Kerala because of the following factors:

(i) The commands of the irrigation projects of Kerala range between 1620 ha and 21045 ha and the command of Neyyar Project is 11740 ha. Table 1 gives the details of the irrigation projects of Kerala. Command area map of Neyyar Project is provided in Figure 3.

Neyyar Irrigation Project, situated in the southern most part of Kerala, at present irrigates an area of 8228 ha. in Kerala and 2300 ha. in Tamil Nadu. The project has got two main canals, namely, Right Bank Main Canal (RBMC) and Left Bank Main Canal (LBMC). LBMC is giving water to Tamil Nadu. According to the statistics of the Irrigation Department, 30% of the command in Kerala covers the paddy fields and the rest covers the dry land.
Fig. 3. COMMAND AREA MAP OF NEYYAR IRRIGATION PROJECT
Most of the commands of the Neyyar Project is in the midland belt, as in the case with almost all the projects in Kerala.

The density of population as well as the density of farmers of the Neyyar command area is comparable with those of the other commands of Kerala.

Neyyar is one among the ten completed projects in Kerala, where activities of Command Area Development Authority are carried out.

There is a uniformity in the canal network and operation patterns of all the irrigation projects of Kerala.

The wetland and dryland crops are presently catered to in the command of Neyyar Project, which practice is being slowly adopted in the other projects, which has been initially meant for only wetland crop.

The commands of Chowara and Vizhinjam are selected for the study, with the intention of achieving representativeness of the sample. While Vizhinjam is a command with more availability of irrigation water, Chowara is one with less availability of it and that has been the main criteria for the selection of these two commands, for the study.

Offtake point of Chowara canal is at 0.45 km of Poovar West Branch Canal, which is one of the two bifurcations of RBMC at its end. Length of the canal is 21 km and the area benefited is 294 ha. Offtake point of Vizhinjam canal is directly from the RBMC at its 24th km. Length of the canal is 20.3 km and the area benefited is 433 ha.
Table-1: Completed Irrigation Projects of Kerala - Salient Features

<table>
<thead>
<tr>
<th>Name of the Project</th>
<th>Year of Completion</th>
<th>Estimated cost in lakh (Rs)</th>
<th>Command ha (net)</th>
<th>Cost per ha (Rs)</th>
<th>River Basin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Malayar</td>
<td>1964</td>
<td>131.66</td>
<td>3238</td>
<td>4060</td>
<td>Bharatapuzha</td>
</tr>
<tr>
<td>2. Malampuzha</td>
<td>1966</td>
<td>580.00</td>
<td>21045</td>
<td>2750</td>
<td>Bharatapuzha</td>
</tr>
<tr>
<td>3. Cheerakuzhi (Diversion)</td>
<td>1973</td>
<td>90.76</td>
<td>1620</td>
<td>5600</td>
<td>Bharatapuzha</td>
</tr>
<tr>
<td>4. Gayathri</td>
<td>1970</td>
<td>220.00</td>
<td>5465</td>
<td>4020</td>
<td>Bharatapuzha</td>
</tr>
<tr>
<td>5. Mangalam</td>
<td>1966</td>
<td>106.00</td>
<td>3440</td>
<td>3080</td>
<td>Bharatapuzha</td>
</tr>
<tr>
<td>6. Pothundy</td>
<td>1971</td>
<td>234.25</td>
<td>5465</td>
<td>4290</td>
<td>Bharatapuzha</td>
</tr>
<tr>
<td>7. Vazhani</td>
<td>1962</td>
<td>107.57</td>
<td>3565</td>
<td>3018</td>
<td>Keechery</td>
</tr>
<tr>
<td>8. Pechi</td>
<td>1959</td>
<td>235.00</td>
<td>17555</td>
<td>1340</td>
<td>Karuvannur</td>
</tr>
<tr>
<td>9. Chalakudy (Diversion)</td>
<td>1966</td>
<td>188.25</td>
<td>19690</td>
<td>956</td>
<td>Chalakudy</td>
</tr>
</tbody>
</table>

(Source: Irrigation Projects of Kerala, 1974)

3.7 METHOD OF DATA COLLECTION

Data used for the study are primary and secondary. The present level of participation of farmers and the factors obstructing it were examined on the basis of the primary data gathered from 281 farmers and 32 officials concerned with irrigation management. Documents of the Irrigation Department and CADA, such as minutes books, work diaries etc. have been used as secondary data for knowing the actual performance of the three-tier system for participating farmers in irrigation management. The main concentration of the study was in analysing the participation of farmers in two different situations on the basis of availability of water (less availability and more availability).
3.8 PREPARATION OF THE TOOL AND THE FIELD WORK

The study took place during 1989-92. The researcher was associated with the activities of participating farmers in irrigation management for more than a decade and has been associated with the activities of the study area since early 1990. With the information gathered from his own observation, collected from books, journals and records and from the experts in the field, the tool for the data collection, interview schedules were prepared. Two separate schedules, one for the farmers and the other for the officials, were prepared. The schedules were pretested on small samples and on the basis of it the schedules were improved and finalised. The researcher himself carried out most of the field work. Assistance of two investigators were also sought for interviewing a small percentage of the sample of farmers. The interview of the farmers were conducted during the first half of 1991 and that of the officers during the end of 1991.

REFERENCES