13. COMMAND AREA DEVELOPMENT- CONTINGENT CROP PLAN IN MAJOR IRRIGATION PROJECTS OF TAMIL NADU - DRAINAGE – IMPORTANCE AND METHODS

Command Area Development

Due to ill distribution, erratic and uncertain nature of rainfall over the year and variations is year to year cause management difficulties in predicting the quantity and scheduling irrigation in command areas. Irrigated agriculture plays a vital role in our food production and therefore a well regulated irrigation system is highly essential to reduce the loss of water and to increase irrigation efficiencies.

To achieve this maximum possible irrigation efficiencies, there are two approaches viz.,

1. Modernization of conveyance system down below the reservoirs upto government controlled outlet. This work involves mainly the construction and maintenance of head sluices, main canals, branch canals, and distributaries (Modernization of Supplier's Side or System Level Development Works)
2. Modernization below the government controlled outlets upto the drains. (Modernization of user's side or Farm level development works) This works are otherwise known as On-Farm Development works (OFD).

Conveyance and distribution system

Reservoir

Main canal

Branch canal

Minor

Distributory

Sluice / outlet

Field channel

Distribution boxes

Turnout

Checks

On-Farm Development Works (OFD)

On-Farm Development works include lining of field irrigation channels and infrastructural facilities like bed regulators, diversion and distribution boxes, turnouts and drop structures to regulate and convey the irrigation water from government controlled outlets to individual land holdings.

This type of work mainly aims to reduce conveyance and application losses, to minimize water logging condition and to conserve water

Thus the OFD works are more helpful in achieving the objective of the modernization of irrigation systems.

But their execution involves lot of problems due to the following reasons

- The OFD works are to be executed in the farmers fields
- The number of farmers involved are more
- The influence of Socio-economic constraints

In Tamil Nadu, the OFD works are undertaken by the State Agricultural Engineering Department

The OFD Strategy

The 10 ha. block outlets are the last government outlets having regulating shutter arrangements only at the sluices of branch canals. Each sluice serves 1 to 12 blocks through the lined distributory. The OFD works are planned duly considering the entire command area under each sluice and the irrigation problems and conflicts in each block are analysed so as to design the preventive and curative measures. The common problems prevailing in command area and the appropriate OFD measures proposed are furnished below in nutshell.

Problems

a) Absence of adequate field channel network causing wastage of irrigation in field to field irrigation.
b) Interfering with the distributory (carrying water down to other 10 ha blocks) by adjoining head reach farmers in each block.
c) Leakage and lateral seepage of water from earthen channels. Running at the edge of higher level lands causing "water logging" in the adjoining low lying fields.
d) Difficulties in irrigating the higher level fields through earthen channels at zero gradient.
e) In the locations the water need to be diverted in different wastage of land and water.
f) Earthen channels with erosive slopes
g) Structural deficiencies essential structures such as channel crossing, small culverts road crossings, with siphon arrangements etc., are to be constructed wherever necessary.

OFT measures to overcome the problems

a) Provision of proper earthen field channel net work to have earthen canal from the source upto each holding
b) Provision of higher level field channels (mostly lined) parallel to the distributory in the upper part of each block for feeding to the adjoining lands without the necessity for interfering with the distributory. By this arrangement the share of lower blocks is fully allowed without any enchroachement.
c) This problem is solved by lining such portion of the earthen channels.
d) Such earthen channels are lined at zero gradient
e) Construction of diversion boxes with leading channels in all the required directions.
f) Bed dams are constructed to stabilize the slope and drop structures are constructed at the point of sudden drop in bed levels.

g) Essential structures such as channel crossing, small culverts, road crossing, with siphon arrangements, etc. are constructed wherever necessary.

The above details are furnished just to show only some of the problems and relevant OFD measures. But the OFD works are carried out with the "systems approach" to provide engineering solutions for the problems in the command area with the objective of improving the irrigation water use efficiency.

Irrigation management under limited water supply

As any scarce resource needs management for its optimal utility. The irrigation water also needs management to obtain optimum crop production with the available water resources. Water management is practiced in two stages. (viz)

1. Water distribution management and
2. Water utilization management. The later is the crop water management at field level.

Rotational Water Supply (RWS)

RWS is one of the techniques is irrigation water distribution management. It aims at equi-distribution of irrigation water irrespective of location of the land in the command area by enforcing irrigation time schedules.

Each 10 ha. block is divided into 3 to 4 sub units (irrigation groups) According to the availability of irrigation water, stabilized field channels and group-wise irrigation requirement, time schedules are evolved. The irrigation will be done strictly in accordance with the group-wise time schedules by the block committee. Within the group, the time is to be shared by the farmers within the group by themselves.