Certificate Course on Participatory Irrigation Management (CCPIM)

Module 11- Water measurement, Water Accounting, Water Audit, and estimation of water losses.

Topic 11.1- Status of irrigation water measurement and its advantages



Introduction:

One of the main objectives of establishing Water Users' Associations is that the sharing of water between the canal sub-systems and the farmers should be equitable. For equitable distribution of water, the flow or discharge measurements are necessary.

Current status of discharge flow measurements

Our National Water Policy and the State Water Policies emphasize on social justice and equitable distribution of irrigation water. Despite such a clear provision in policies, most irrigation projects do not have the necessary arrangements for the measurement of water flow at the minor level canals and their outlets. There are many reasons for this slackness.

- Some field officers are also afraid that if the farmers learn the measurement of discharges and losses occurring in the system, it will be exceedingly difficult to satisfy them with the current status of poor water management.
- 2) On many modernized irrigation projects where water measuring structures were installed, there are complaints that the farmers damaged or tampered these structures. One reason for farmers harming the water structures is that many water measuring structures look as if they are constricting the water flow causing a reduced flow. If experiments are done on the field and it is shown to the farmers that their assumption is not correct, then farmers will not damage the water measuring structures.
- 3) It has been found in experience that if it is explained to the farmers in simple language the benefits of properly functioning measuringstructures, the farmers will use those structures and also protect them.

The unit of discharge/flow measurement

Canal water flow or discharge is most commonly measured in cusec (acronym for cubic feet per second). When we say that the canal discharge is 1 cusec, what does that mean? It means, 1 cubic feet water is crossing the dischargelocation or moving ahead in a second (the one cubic feet quantity of water can be visualized as a water filled in a one foot high bucket with square bottom having one foot length and one foot breadth). In Metric System, the cumec is used as a unit of discharge measurement which implies that one cubic meter of water is moving ahead in a second. A smaller unit, liters per second, is often used to measure the discharge of outlets. The mutual relation of these three units is given below: 1 cumec = 35.31 cusec = 1000 litre/second

1 cusec = 28.3 litre/second

Benefits of water flow measurement

An obvious benefit of water measurement is that the farmer has to pay the water rate in proportion to the water used. If the water rates are charged on the basis of quantity of water supplied which is measured at the structure, a lot of labor and cost in measuring the irrigated area for charging of water fee will also be saved. Measuring water has many other benefits as enumerated below:

- The WUA is given a mutually agreed amount of water at the Head of a canal system under a contract between the department and the WUA. The WUA pays the water charges to the Department on volumetric basis. Hence the WUA must be in a position to verify whether it is getting agreed quantity.
- 2. Water measurements can indicate whether the canal sub systems and outlets are receiving the right quantity of water or not.
- 3. By measuring the water at different places of the canal, it can be identified which part of the canal is causing water loss, and corrective measures can be taken.

With the above background we begin the discussion about the measurement of water flow.

During irrigation season, a WUA needs to take flow measurements at important locations regularly. For example, a WUA needs to know that how much water is received at the head of the canal, or an outlet or water courses.