PROCEDURES FOR PLANNING ON-FARM WATER MANAGEMENT

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Water applied to the farm by irrigation should satisfy the crop requirements for evapotranspiration. Crops obtain their requirements of water via the soil which acts as a storehouse for water. Because of this two step process, there is bound to be water losses during irrigation. Good water management at farm level means that the entire farm gets the required amount of water while keeping the wastage to the possible minimum. Adequate and uniform irrigation of the fields with the practically achievable minimum of wastage is the objective of on-farm water management.

Water Requirements

In order to supply the adequate quantity of water, an estimate of the crop water requirement and the capacity of the soil for after storage should be known. Each of these factors have to be determined separately through experimental investigation. Presently reliable data on these factors are available for different crops and soils in Sri Lanka. Detailed estimates of soil storage and crop water requirements have been determined through experiments for many crops in Sri Lanka.

Any soil has a finite capacity to store water. The maximum amount of water a soil can store is referred to as field capacity. Any water in excess of this amount is wasted as deep percolation. Similarly, the amount of water that can be stored and released to the plant is also finite and depends on the type of soil. This quantity of water is referred to as available moisture. Therefore, the frequency of irrigation will be the number of days required for the plants to deplete the available moisture in the root zone through evapotranspiration. In good water management, water is applied at each irrigation to fill the root zone to field capacity. Therefore, the quantity of water issued should match the water requirements of the extent irrigated to obtain adequacy in irrigation.

Uniformity of Water Application

The required quantity of water issued to the farm should be uniformly applied in the farm. Very often through poor irrigation practice and inadequate land levelling, both over-irrigation and under-irrigation occur within the farm.

Efficiency of Irrigation

Irrigation application efficiency is defined as the ratio of water issued to the water actually required. Low irrigation application efficiency can either be due to over-irrigation or under-irrigation. In the surface irrigation system irrigation applicaton efficiency varies between 50 and 70 percent. Poor irrigation efficiencies result due to poor water control and bad irrigation methods.

Irrigation Techniques

Irrigation techniques adopted to achieve good water management should provide for (a) adequate supply of water, (b) uniform application to the fields, (c) achieve reasonably good application efficiency. The following steps are suggested for planning water management:

1. Assess crop water requirement,
2. Estimate acceptable efficiency of water losses,
3. Determine overall water requirement,
4. Determine farm water issues to match extent irrigated,
5. Plan distribution for uniform irrigation,
6. Organise farmers participation in the actual distribution.