

CHAPTER 12

IRRIGATION

According to Report of Food & Agricultural Organisation (FAO), next only to USA, India has the 2nd largest amount of arable land. But irrigation facilities are available to only a part of this land masses. Besides, assisting growing of agricultural crops, maintenance of landscapes, and revegetation of disturbed soils in dry areas and during periods of inadequate rainfall, irrigation also has a few other uses in crop production, which include protecting plants against frost, suppressing weed growing in grain fields and helping in preventing soil consolidation. Irrigation systems are also used for dust suppression, disposal of sewage, and in mining.

Type of Irrigation Technique: Various types of irrigation techniques differ in how the water obtained from the source is distributed within the field. In general, the goal is to supply the entire field uniformly with water, so that each plant has the amount of water it needs, neither too much nor too little. The various irrigation techniques are as under:

Surface irrigation: In surface irrigation systems, water moves over and across the land by simple gravity flow in order to wet it and to infiltrate into the soil. Surface irrigation can be subdivided into furrow, borderstrip or basin irrigation. It is often called flood irrigation when the irrigation results in flooding or near flooding of the cultivated land.

Localized irrigation: Localized irrigation is a system where water is distributed under low pressure through a piped network, in a pre-determined pattern, and applied as a small discharge to each plant or adjacent to it. Drip irrigation, spray or micro-sprinkler irrigation and bubbler irrigation belong to this category of irrigation methods.

Drip Irrigation: Drip irrigation, also known as trickle irrigation, functions as its name suggests. Water is delivered at or near the root zone of plants, drop by drop. This method can be the most water-efficient method of irrigation, if managed properly, since evaporation and runoff are minimized. In modern agriculture, drip irrigation is often combined with plastic mulch, further reducing evaporation, and is also the means of delivery of fertilizer.

Sprinkler irrigation: In sprinkler or overhead irrigation, water is piped to one or more central locations within the field and distributed by overhead high-pressure sprinklers or guns. A system utilizing sprinklers, sprays, or guns mounted overhead on permanently installed risers is often referred to as a solid-set irrigation system. Higher pressure sprinklers that rotate are called rotors and are driven by a ball drive, gear drive, or impact mechanism. Guns are used not only for irrigation, but also for industrial applications such as dust suppression and logging. Sprinklers can also be mounted on moving platforms connected to the water source by a hose. Automatically moving wheeled systems known as traveling sprinklers may irrigate areas such as small farms, sports fields, parks, pastures, and cemeteries unattended.

Sub-irrigation: Sub-irrigation also sometimes called seepage irrigation has been used for many years in field crops in areas with high water tables. It is a method of artificially raising the water table to allow the soil to be moistened from below the plants' root zone. Often those systems are located on permanent grasslands in lowlands or river valleys and combined with drainage infrastructure. A system of pumping stations, canals, weirs and gates allows it to increase or decrease the water level in a network of ditches and thereby control the water table. Sub-irrigation is also used in commercial greenhouse production, usually for potted plants. Water is delivered from below, absorbed upwards, and the excess collected for recycling.

Highlights:

- The net area under irrigation by all sources of irrigation increased from 55.13 million hectares in 2000-01 to 62.29 million hectares in 2007-08.
- The net area under irrigation by Government canals increased from 15.76 million hectares in 2000-01 to 16.31 million hectares in 2007-08, whereas, net area under irrigation by private canals increased from 0.20 million hectares in 2000-01 to 0.22 million hectares in 2007-08.

- The net area under irrigation by tanks enhanced from 2.46 million hectares in 2000-01 to 1.96 million hectares in 2007-08, whereas, net area under irrigation by tube wells and other wells enhanced from 33.83 million hectares in 2000-01 to 37.79 million hectares in 2007-08. Net area under irrigation by other sources enhanced from 2.89 million hectares in 2000-01 to 6.01 million hectares in 2007-08.
- The total gross irrigated area enhanced from 76.19 million hectares in 2000-01 to 87.26 million hectares in 2007-08. The gross irrigated area under food crops increased from 64.18 million hectares in 2000-01 to 72.20 million hectares in 2007-08, whereas, the gross irrigated area under non-food crops increased from 12.00 million hectares in 2000-01 to 15.06 million hectares in 2007-08

This chapter contains the following tables:

Table 12.1: presents year-wise net area under irrigation by sources since 2000-01 and state-wise break-up for the year 2007-08. If two or more crops on a given piece of land are irrigated in the same year from the same source, the area is counted only once.

Table 12.2: presents year-wise gross area under irrigation by various crops since 2000-01 and state-wise gross area under irrigation during 2007-08. These data represents gross irrigated area. It is the total area under crops, irrigated once and/or more than once in a year. It is counted as many times as the number of times the areas are cropped and irrigated in a year.