

Crop Production and Management

Irrigation, Weeding, Harvesting and Storage

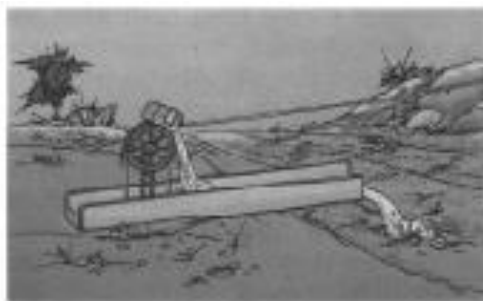
IRRIGATION : The process of artificial supplying of water to crop at different intervals is called irrigation. The time and frequency of irrigation varies from crop to crop, soil to soil and season to season

Sources of irrigation : Well, tube well, ponds, lakes, river, canal and dams.

Methods of irrigation : Surface irrigation : In this type of irrigation the water is lifted from lake, well and canal by using following traditional ways like moat (pulley system), chain pump, dhekli, rahat (lever system).



Moat (pulley system)



Chain pump



Dhekli Rahat



(lever system)

- These methods are cheaper and less efficient.
- These methods require cattle and human labour.

- The lifted water is allowed to run over the field. Surface irrigation can be subdivided into furrow and basin irrigation.

Furrow irrigation : The water is allowed to run through furrow between the ridges.

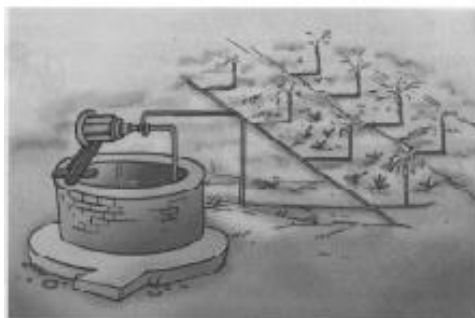
Basin irrigation : The field is flooded with water by mating bunds all around it.

❖ **Disadvantages of traditional ways of irrigation :**

- They require more human labour and human efforts.
- They are less efficient so water is wasted in large quantity.
- They are not useful for poor water regions. Nowadays the following modern ways of irrigation are used.

(i) Sprinkler system :-

- In this system the perpendicular pipes having rotating nozzels on top, are joined to main pipe line at regular intervals.
- It spreads water uniformly over crop plants and field.
- This method is useful for sandy soil and uneven land.
- It is an efficient system in the canal irrigated area of Haryana and Rajasthan.

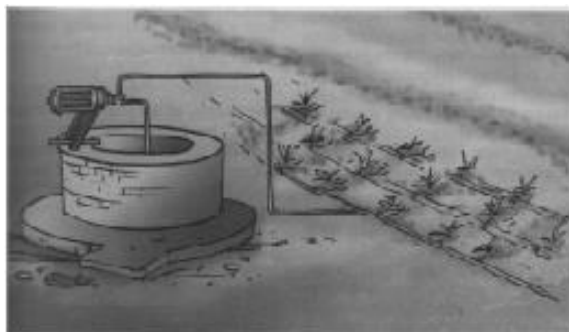


Sprinkler System

(ii) Drip system or trickle irrigation:

- It involves the use of pipes fitted with small tubes called emitters. The pipes are laid over or under the soil and emitters release water drop by drop around the roots of the plants.

- In this method water is not wasted at all.
- This method is a boon in poor water regions.
- This is the best irrigation technique for fruit crops, garden and trees.



Drip System

❖ **Other irrigation systems in India.**

(i) **Canal system** : Canals receive water from the rivers. The main canals are divided into branches which are further divided into distributaries to cover maximum areas for irrigation.

(ii) **Tanks** : Tanks are water storage reservoirs which store the run off water of small catchment area.

(iii) **Dug well** – Water is lifted up by bullock. Wells Tube well – Water is pumped up by using diesel or electric run pumps.

(iv) **River valley system** : Due to heavy rainfall, many river valley are found in Western Ghats and Karnataka. This results in higher run off and discharge flows in the rivers. To prevent this coffee, rubber, coconut are cultivated on the slopes of these valleys and single rice crop is grown at bottom.

(v) **River lift system** : Water is directly drawn from the river using pumps.

❖ **Advantages of irrigation :**

- It maintains the moisture of soil.
- It helps in germination of seeds.

- It helps in supply of essential nutrients.
- Nutrient dissolved in water get transported to each part of plant.
- It helps in growth of plants

WEEDING : Removal of weeds or undesirable plants is called weeding. It can be done by khurpa (trowel) and Harrow.

Weed : They are unwanted plants which grow along with a cultivated crop in a field. They can severely reduce crop yields by competing for light, water and nutrients.

Some common weeds : Parthenium (Gajar grass), Convolvulus, Amaranthus (Chaulai), Chenopodium (Bathua), Xanthium (Gokhroo) and Dandelions.



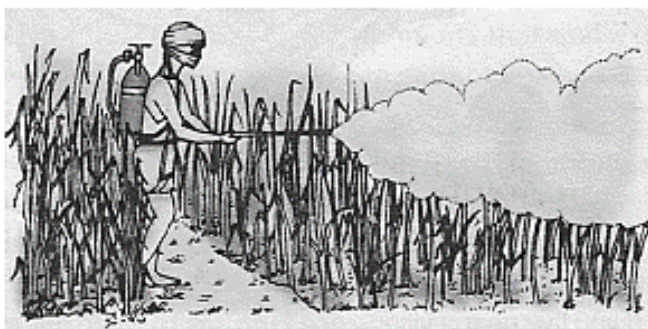
(a) Amaranthus (b) Chenopodium (c) Convolvulus (d) Wild oat (e) Grass

SOME COMMON WEEDS

❖ METHODS OF WEED CONTROL

(a) **Mechanical control :** It can be done by ploughing, burning and cutting of weeds before they produce flowers and seeds.

(b) **Chemical control :** It can be done by spraying weedicides or herbicides (chemical which are used to kill the weeds). e.g. 2, 4-D, 2, 4, 5-T, MCPA, Butachlor & Atrazine.



Spraying weedicide

HARVESTING : The cutting and gathering of crops after its maturation is called harvesting. It can be done manually by sickle or by a machine called harvester.

- Many festivals are associated with harvesting season such as Baisakhi, Bihu, Onam, Pongal, Holi, Diwali.
- Many crops require special harvesting machines. Cotton strippers (for cotton), corn pickers or huskers (for corn)
- Fruits and vegetables are generally hand-picked when ripe.

STORAGE : Proper storage is necessary to get seasonal food regularly throughout the year. Freshly harvested grains have more moisture. If freshly harvested grains are stored without drying, then they may get spoiled and lose their germination capacity. Hence before storing them the following precautions must be undertaken.

❖ Precautions :

- Grains should be safe from moisture, insects, rats, and microorganisms.
- Grains must be properly dried in the sun to reduce the moisture in it.
- Grains must be stored in jute bags or metallic bins.
- Store grains in silos, granaries and godown with chemical treatment to protect them from pests.
- Dried neem leaves can be used for storing food grains at home.

❖ **Factors affecting stored food :**

(i) **Biotic factors** : e.g. insects, micro-organisms, mites, birds, rodents and other animals.

(ii) **Abiotic factors** : e.g. moisture, humidity and temperature.



Silos for storage of grains



Storage of grains in granaries