

**INFILTRATION:** It is the process by which water on the ground surface enters the soil. Infiltration rate in soil science is a measure of the rate at which soil is able to absorb rainfall or irrigation. It is measured in inches per hour or millimetres per hour. The rate decreases as the soil becomes saturated. If the precipitation rate exceeds the infiltration rate, runoff will usually occur unless there is some physical barrier. It is related to the saturated hydraulic conductivity of the near-surface soil. The rate of infiltration can be measured using an infiltrometer.

**FACTORS AFFECTING INFILTRATION:**

**(i) Intensity and duration of rainfall:**

When the precipitation takes place with heavy intensity, the impact of water causes

mechanical compaction and in wash of fine particles, resulting in faster decrease in the rate of infiltration. However, rainfall of lesser intensity results in higher infiltration rate. The rainfall with higher duration will result in lower infiltration in comparison to the same quantity of rain falling as n number of isolated storms.

**(ii) Soil Texture and Structure:**

It is already made clear that the water cannot continue to enter soil more rapidly than it is transmitted downward. The conditions at the surface, therefore, cannot increase infiltration unless the transmission capacity of the soil profile is adequate.

The continuity of non-capillary or large pores provides easy paths for percolating water. If the subsoil formation has coarse texture the water may infiltrate into the soil so quickly that no water will be left for runoff even if rainfall is quite heavy. On the contrary clayey soils after soaking some water in the initial stages of the rainfall may swell considerably. It makes the soil almost watertight and infiltration may get reduced to practically negligible extent.

**(iii) Conditions at Soil Surface:**

Even if the subsoil has excellent under drainage but at the surface soil pores are sealed due to turbid water or by in wash of fine soil particles it may prevent entry of water into the soil and infiltration rate will be low.

**(iv) Soil-Moisture Content:**

When the soil is fairly dry the rate of infiltration into the soil is quite high. The infiltration rate diminishes as the soil-moisture storage capacity is exhausted. After this infiltration rate equals transmission rate. The rate of infiltration in early phases of a rainfall will be less if the soil pores are still filled from previous rain storm.

**(v) Movement of man and animal activities:**

When there is heavy movement of man and/ or animal, the soil gets compacted, resulting in reduction in the infiltration rate

**(vi) Type of Vegetative Cover:**

Vegetative cover affects surface entry of water significantly. The vegetation or mulches protect the soil surface from impact of rain drops. The lengthy and extensive root system penetrates the soil and increases its porosity. Organic matter from crops promotes a crumbly by structure and improves soil permeability. Forest canopy protects soil surface whereas row crops provide less protection to soil.

**(vii) Soil Temperature:**

If saturated soil mass gets frozen due to severe low temperature it becomes nearly

impermeable. It affects the infiltration.

**(viii) Human Activities on Soil Surface:**

If the soil surface gets compacted due to construction of roads, operation of tractors and other farm implements and machinery the porosity of the soil is decreased. As a result bigger pores are almost eliminated making soil impermeable. It reduces the infiltration rates appreciably.