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Editorial

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Definition and Purpose of Percolation of Soil

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Percolation (from Latin percolare, "to filter" or "trickle through") is the movement and filtering of fluids through porous materials in physics, chemistry, and materials science. The rate at which water percolates into the soil is referred to as percolation rate. Water, on the other hand, does not percolate at the same rate in all soils. Water percolates most effectively in sandy soil, while water percolates least effectively in clay soil. The rate of water percolation varies depending on the type of soil.

In sandy soil, it is highest, and in clayey soil, it is lowest. By flowing through the crust, water infiltrates the soil. The flow of water through the soil is known as percolation. Finally, as the water percolates deeper into the soil, it meets ground water, or water under the surface. The "water table" is the upper surface of this underground water. If a 12-inch thick loamy sand soil liner with a percolation rate of 15 to 20 minutes per inch is mounted in the trench or bed, soils with a percolation rate faster than five minutes per inch are suitable.

The trench or bed is then sized based on the percolation rate of the soil liner. The clayey soil has the slowest water percolation rate. The sandy soil (which has the highest percolation rate) allows rainwater to enter a well more quickly and in greater quantities. Sandy soil holds the least amount of rainwater. Surface runoff is a vital aspect of the water cycle because it allows much of the water to return to the oceans, where a lot of evaporation occurs. Rainwater soaks into (infiltrates) the earth, soil, and underlying rock layers, a process known as percolation. Percolation can be used to forecast water transport variables including leaching rates and content flow into water.

This is most commonly used in agriculture to assess fertiliser movement or soil salt content. The total amount of water a soil can retain at field capacity is known as its water holding capacity. Sandy soils have a limited ability to store water. Crops can be unable to access water in the subsoil due to subsoil constraints (acidity, hardpans, etc.). Compost as a soil amendment loosens up compacted soil particles, allows water to percolate, and promotes healthy root and plant growth.

The pH level of the soil is also stabilised when heavy soils are mixed with compost, allowing for optimal nutrient availability to the plants. Too much water in the soil results in a lack of oxygen, which promotes pathogen growth and the plant's inability to absorb water. To minimise the occurrence of soil-borne pathogens, it's crucial to understand the percolation rate, or the rate at which water passes through the soil. Percolation is a room-temperature extractive process that simply means "passing a liquid through a solid material drop by drop." This aids in the expansion of plant cells and the flow of active ingredients through the liquid. Surface runoff is a vital aspect of the water cycle because it allows much of the water to return to the oceans, where a lot of evaporation occurs.

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