

# DETERMINATION OF INFILTRATION SPEED AND SOIL WATER CONSTANTS

Today, farmers are facing serious issues. Increasing populations, rising production costs and a decrease in many production activities are adding pressure across the industry. Higher demand means water, one of nature's most precious resources, becomes a critical element. Understanding its infiltration and retention in soil is paramount.

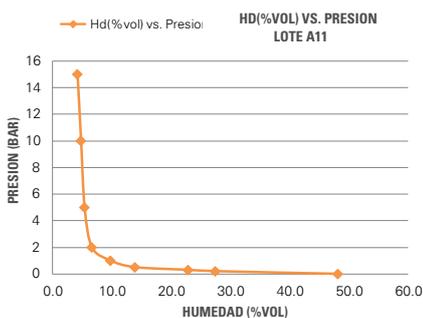
Understanding infiltration velocity through the use of specialised measuring techniques enables the agricultural industry to optimise water use and water availability for crops. In countries where water supplies are limited and agriculture takes place in sandy areas, or even deserts, identifying the exact quantity of water required and when it should be applied must be considered a principal production issue.

## INFILTRATION SPEED

Due to its importance to agricultural irrigation, water management, conservation of both soil and water resources, and other agricultural activities, the subsoil irrigation water infiltration process has been thoroughly studied. This method involves determining the speed of vertical entry of a thin sheet of water into a soil profile.

The determination of infiltration speed enables us to determine:

- An irrigation system design.
- Irrigation span.
- Volume of surface runoff water.
- Water erosion hazards.
- Water storage capacity.
- Drainage problems.



Soil humidity curve

## SOIL MOISTURE TENSION

Soil moisture tension is the measurement of how tightly water clings to the soil. It indicates how much power per air unit may be applied to move water in soil, expressed in terms of atmospheres.

## SOIL WATER RETENTION CURVES

Based on its characteristics each soil presents different moisture constants that are characterised by the water retention curve. Draining water, capillary, and soil adhesion water is differentiated depending on the size of the pores. The determination of the water retention curve is performed in a laboratory with different tension values (between 0 and 15 atmospheres).

Knowing the soil water retention curve will help us find out:

- Water constants (saturation, field capacity, wilting point).
- Water availability.
- Irrigation criterion, exploitable water, or irrigation constant water regime.
- Irrigation sheet or irrigation objective and irrigation span.
- Soil porosity.

Today, modern agriculture uses state-of-the-art pressurised irrigation systems, which are designed in accordance with our understanding of the physical and chemical properties and hydric characteristics of the soil.

SGS del Peru SAC's state-of-the-art laboratory facilities can support the development and growth of the agriculture in the region. Staffed by professional agricultural engineers that will help clients throughout their agricultural operations.



Sampling of undisturbed soil to measure bulk density of soil



Pot and plate pressure to determine soil moisture curves



Cylinder infiltrometer double to determine the soil infiltration rate

Contact:

**JORGE BAZO**  
BUSINESS DEVELOPMENT MANAGER

SGS DEL PERU S.A.C.  
Av. Elmer Faucett 3348, Callao  
Tel: +511 517 1900  
E-mail: [Jorge.Bazo@sgs.com](mailto:Jorge.Bazo@sgs.com)