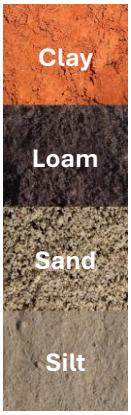
# Infiltration rates

Infiltration is a big word that means water soaking into the ground. When it rains, water doesn't just stay on the surface, some of it sinks down into the soil. That sinking-in process is called infiltration. It works by, firstly rain or water spilling onto the ground. Water moves down through the spaces in the soil. It gets soaked up like a sponge! If the soil is full, or made of something hard, water can't soak in and runs off instead and that can cause puddles or even flooding.




The type of soil, how packed it is, how much plant material it has, and how wet it is already all affect how quickly water soaks in. For example, sandy soil has big particles with lots of spaces between so water goes through quickly like a sponge. Whereas, clay soil has tiny, tight particles with little space meaning water moves through slowly or even pools on top. Soil with bits of old plants, leaves, and compost is called rich in organic matter. This helps the soil hold more water and let it soak in better. It also gives water a place to slow down and spread out. If the soil is already very wet, it can't take in much more water. But if it's dry, water can soak in faster, at least at first! That's why understanding soil properties is so important for farmers, gardeners, and scientists who want to grow healthy plants and protect against flooding.

Infiltration is important because it helps keep the environment healthy and balanced. When rainwater soaks into the ground, it provides water to plants by reaching their roots, which helps them grow strong and healthy. It also refills underground water supplies, called groundwater, which people and animals use for drinking, farming, and other needs. Infiltration helps reduce flooding by letting water sink into the soil instead of running off and causing puddles or water to overflow onto streets. It also helps clean the water, because as it moves through the soil, dirt and harmful chemicals can get filtered out. Without infiltration, water would not be stored properly in the ground, and plants, animals, and people could run out of clean water.

The drainpipe test is a fun and easy way to see how quickly or slowly water soaks into soil, this is called the infiltration rate. Scientists and gardeners use this test to find out if soil drains well or holds too much water. You'll need a short piece of drainpipe, plastic tube, or a large tin can (with both ends cut off), a ruler, a measuring jug with water, a stopwatch or timer, and a notebook and pencil to record your results. First of all, push the pipe into the soil. Stick the drainpipe straight into the ground about 10–15 cm deep, like a mini well. This stops water from running out the sides. Then pour in the water. Fill the pipe with water up to a certain height (like 10 cm). Use your ruler to measure how deep the water is. Now start the timer! Watch the water level go down and use your stopwatch to see how long it takes for the water to soak into the soil. Make sure to keep track of how many minutes it takes for the water to go down by 1 cm, 2 cm, or disappear completely. Do the test 2 or 3 times in the same spot to get an average result. For more details have a look at 3-field-work-activity.pdf or Measuring Soil Infiltration Rates: A Science Classroom Activity - Wild Earth Lab

If the water drains away quickly then you probably have sandy soil. If the water doesn't drain at all the soil may be made of clay, compacted (squished together), or there could be lots of roots. You could try repeat the test at a few different locations, does the water drain away slower or faster, why could this be?