How to Do a Perc Soil Test for Fruit and Pecan Production

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A percolation (perc) test is a soil test used to determine the absorption of water into the soil. Most municipalities require a specific absorption rate to issue permits for construction of new buildings and new septic systems.

The perc test is also very important in agriculture because soil drainage can affect crop production. For example, in fruit trees we want to determine the available soil to grow the crop. If the soil is saturated with water, the oxygen, which is important for root growth, is removed.

The perc test standard used throughout the world is below. The steps are basically the same no matter where you are, only the rate will change depending on requirements.

**ITEMS NEEDED TO DO A PERC TEST**
- Post-hole diggers
- Timer
- Yardstick
- Water

If you can, use a PTO-driven post-hole digger. You can mark the auger with spray paint at the depth you need and save yourself a lot of physical labor because most sites will require more than one hole.

Possible substitutions: You can use a shovel, but shovels are not the best for deep holes that are not necessarily wide. You can use a tape measure, but since you will be measuring muddy water you will want to wipe the tape off before you allow it to retract to prevent damage to the tape measure.

**STEPS TO DO A STANDARD PERC TEST**

**Step ONE**
Dig a hole that is 2 feet deep and 6 to 8 inches wide.

**Step TWO**
Fill the hole to the top with water and allow the water to completely drain.

**Step THREE**
Refill hole to the top with water again and use a yardstick to measure the depth of the water.

**Step FOUR**
Wait 30 minutes then measure the remaining water in the hole.

**Step FIVE**
Calculate the rate of water absorption by: 30 minutes ÷ by starting water depth - final water depth.

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FORMULA EXAMPLE
Water depth at the start of the perc test is 24 inches and 20 inches at the end of 30 minutes.

The calculation for this example would be 30 divided by (24 minus 20), or \( \frac{30}{(24 - 20)} = \frac{30}{4} = 7.5 \) inches per hour.

Number of Holes
In a standard perc test, it is recommended to dig five holes per site, with holes toward each corner and one in the center. In agriculture, perc test sites should be determined by soil type and topography features. Consult a soil map. Does your field have different soil types? Dig at least two holes per soil type. Do you have hills and valleys, drainage areas, or locations that hold water? Dig at least two holes for each feature.

HORTICULTURE CROPS
Limited research has been conducted with horticulture crops, but industry experts say that an ideal drainage rate is 1 to 2 inches per hour. After checking the rate, leave the hole for 24 hours to make sure the water completely drains. Stone fruit especially is very sensitive to waterlogged roots; if the hole does not completely drain, water might cause damage to the future root system. It is recommended to do a perc test before planting fruit orchards or other horticulture crops.

PECANS
Step 1: Dig a hole that is 3 feet deep and 6 to 8 inches wide.
Step 2: Fill the hole to the top with water and allow the water to completely drain.
Step 3: Refill the hole to the top with water again.
Step 4: Wait 48 hours then measure the remaining water in the hole.

If no water is in the hole after 48 hours, the site is perfect in regards to drainage for a pecan orchard. If 12 inches or less of water remains in the hole, then a pecan orchard can be planted, but the trees will have a decreased production potential. If the hole still contains 24 inches or more of water, the site is not suitable for a pecan orchard.