Holding Pattern
A soil is called "permeable" when it allows water to pass through it. Which soils are the most permeable? Which soils hold the most water, the least, or just the right amount? For this dirty experiment, it will be best to set up workspace outside where you can just dig in!

What to do: With the nail, punch about six holes in the bottoms of the paper cups or the carton bottoms. Fill each container about half-full with a soil sample to be tested. Pour 1/2 cup of water into each sample of soil to be tested. Place a small container under each to catch the water. Pour the water that drains into each container into the measuring cup. Record the type of soil tested in and how much water the soil held. Repeat this step with other soils and again measure the amount of water.

What happens: There will be noticeably more soil and water in the bottom of some containers. Water will drain faster from some soil samples than from others.

Why: Clay soils retain, or keep, too much water, while sandy soils drain too quickly. Too much water around the tender roots of plants can cause rotting, while with too little water the roots will dry out and shrivel up. Soils with a lot of humus, or decomposed, broken-down plant and animal matter, are best for most plants. It retains just enough water for healthy plant growth while stimulating the roots. Some plants, however, still do well or better in other kinds of soil.

YOU NEED
• nail
• equal amounts of four different soil samples: Clay, sand, potting soil, rich loan or gardening soil
• 4 paper cups or the bottoms of waxed cartons
• small containers
• water
• paper
• pencil
• measuring cup