Fractional Soil Analysis

One of the most popular home tests for measuring the percentage of sand, silt, and clay involves nothing more sophisticated than a litre glass jar with lid and a ruler.

It is based on the rate the different soil particles settle in water. The large, boulder shaped sand particles settle the fastest, followed by the smaller particles of silt, and then followed by the very small and flattened particles of clay.

1. Collect about 2 cups (500 ml) of soil to be tested and pick out the bulk of the organic matter. Let the sample dry in the sun and break up any clumps by tapping with a hammer if necessary.

2. Half fill a one litre glass jar with soil. Use a felt pen and mark the top level of the soil on the side of the jar.

3. Fill the jar almost to the top with water, add ½ a teaspoon dishwashing liquid, cap the jar and shake vigorously for five minutes.

4. And shake. And shake some more.

5. Now for the measurement. Stop shaking the jar and immediately put the jar down in bright light.

6. Wait exactly two minutes.

7. Look closely into the murky water and mark the depth of the settled soil on the the jar. This sediment is the sand fraction in your soil.

8. Leave the jar undisturbed for exactly two hours, then take another look and make another mark at the top of the sediment. What settled after two minutes but within 2 hours is the silt fraction.

9. At this point, all that remains suspended in the water is the clay and maybe the organic matter. Clay can take a long time to settle out – days, sometimes weeks. But practically the section between the first mark you made and your silt mark will be the clay fraction.

10. Measure each mark with a ruler. Dredge-up your school math and calculate the percentage of each.
    - 10.1. Percentage of sand = (depth of sand/total depth) * 100
    - 10.2. Percentage of silt = (depth of silt/total depth) * 100
    - 10.3. Percentage of clay = (depth of clay/total depth) * 100