

Dry Farming Extension Guide

APPENDIX A: The Jar Test for Approximating Soil Texture

This is an appendix to the Dry Farming Vancouver and Gulf Islands Extension Guide. The guide provides a site suitability toolkit and shares lessons learned from dry farming trials on Vancouver and the Gulf Islands. To access all materials from the Dry Farming Vancouver and Gulf Islands Extension Guide see <https://www.kpu.ca/dry-farming-resources>.

Soil texture is the relative proportion of sand, silt, and clay particles in a soil.

Materials

- Jar with straight edges and a tight-fitting lid
- Permanent marker
- Ruler
- Soil sample
- Water

Method

1. Remove any larger rocks, gravel, and organic debris from your soil sample.
2. Fill the jar about half full of soil.
3. Mark the jar at the top of the soil.
4. Fill the remaining space with water, leaving approximately inch of space at the top.
5. Cap the jar and shake vigorously until the mixture become uniform.
6. Set the jar on a level surface for one minute. After one minute, mark the top of the settled layer of soil. This settled portion of the sample represents the sand layer.
7. Wait an additional 4 hours and mark the top of the settled layer of soil. This settled portion of the sample represents the silt layer.
8. The difference between the highest mark and the silt mark is assumed to be the clay portion. Clay particles are microscopic and therefore take days to settle.

Measurements and Calculations

1. Measure the height of each settled layer

HTOTAL = Total height of soil sample: _____ (cm)

HSAND = Height of the sand layer only: _____ (cm)

HSILT = Height of the silt layer only: _____ (cm)

HCLAY = HTOTAL - HSAND - HSILT: _____ (cm)

2. Calculate the percentage of sand silt and clay

% SAND = HSAND / HTOTAL x 100 = _____ %

% SILT = HSILT / HTOTAL x 100 = _____ %

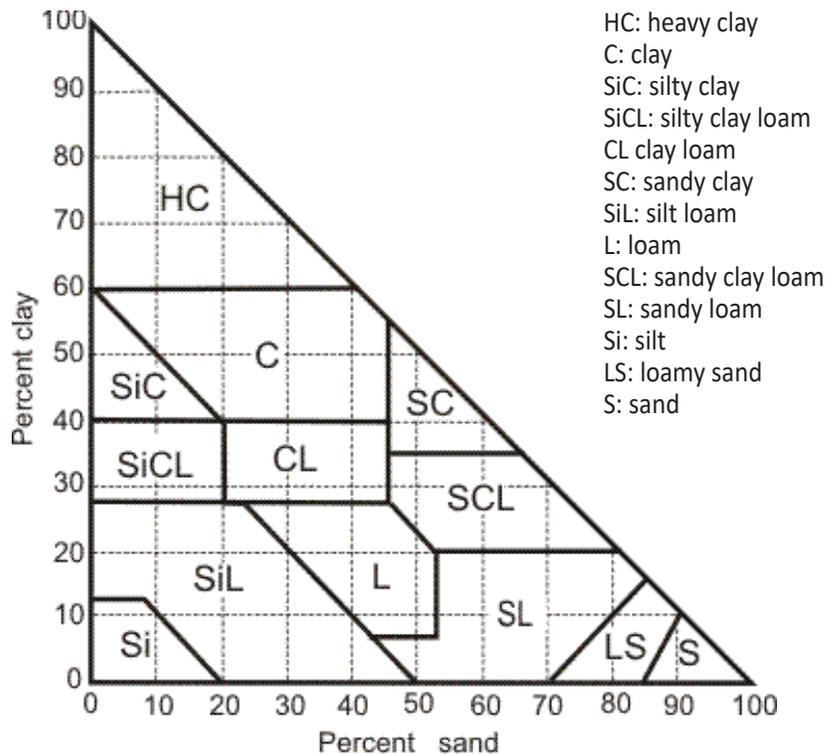
% CLAY = HCLAY / HTOTAL x 100 = _____ %

3. Approximate soil texture using the Canadian soil texture triangle

The texture of a given soil sample can be determined using the Canadian soil texture classes triangle (Figure 1) and the percentage of sand, silt, and clay from the exercise above. First, find the percentage of sand particles indicated by the jar test on the x axis of the triangle. Next, find the percentage of clay particles as indicated by the jar test on the y-axis of the triangle. Follow the dotted lines at each of these points to where they intersect in the triangle.

Identify the 2-3 letter texture code in the triangle describing the area where these two lines intersect. For example, a soil sample that is found to have 40% sand particles, and 20% clay particles (and therefore the remaining 40% is composed of silt particles) is categorized as a loam, indicated with the letter "L" in the figure below.

FIGURE 1. CANADIAN SOIL TEXTURE CLASSES TRIANGLE



Source: Classification Working Group. 1998. The Canadian System of Soil Classification, 3rd ed. Agriculture and Agri-Food Canada Publication. Figure 42. Retrieved from <https://sis.agr.gc.ca/cansis/taxa/cssc3/chpt17.html>