

Determining Soil Type

The soil ribbon test is a fast way to remotely assess soil type in the field. By knowing the ribbon length and texture, we can approximate if the soil is clay, sandy, or loamy – and how it will drain and hold nutrients. This test only requires some soil, water, and a tape measure to perform.

Materials

- Shovel or trowel
- Tape Measure
- Spray bottle with water

Process to perform the Soil Ribbon Test

1 – Gather a soil sample. Collect a sample of the soil you wish to test by taking a handful of soil from the top 4-6 inches.

2 – Wet the soil. Spray a small amount of water onto the soil. Start trying to form the soil into a ball. Keep adding water until you are able to form a ball.

Note – if it is not possible to form a ball, then it is likely that you just have sand for soil.

3 – Knead the soil sample. Work the ball in your hands, similar to kneading dough. Remove any bits of organic matter (leaves, stems) and any small pebbles.

Keep working the ball of soil until no dirt sticks to your hand. It should feel similar to silly putty or play dough.

4 – Make a ribbon. Start to form the ball into a ribbon by squeezing it in your hand like you would hold a staff or handle. Press your thumb so that a ribbon begins to form, extending out over your index finger.

As the ribbon grows, move the mass of soil up in your hand, and press your thumb to continue forming a ribbon. Keep doing this until the ribbon breaks.



5 – Measure the ribbon length. By measuring the ribbon length, record this.

Note – I often will make several ribbons in my sample area. This way I can ensure that there is no random pebble or piece of wood that causes a ribbon to break prematurely.

6 – Check the texture and feel of the soil. Take a small piece of the ribbon, about the size of a pea and place it in the palm of your hand. Add a significant amount of water to the soil so that it becomes fully saturated or over-wet.

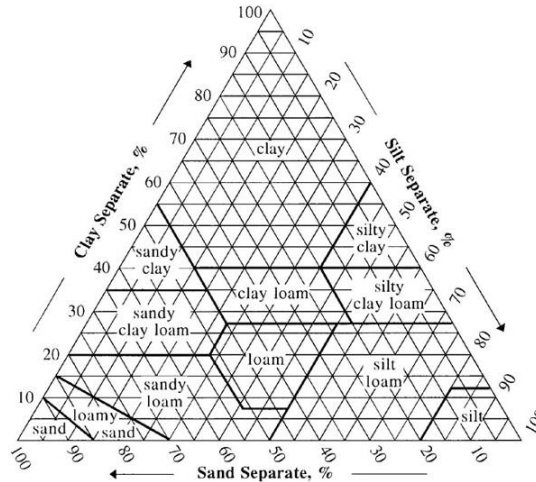
7 – Rub your index finger on the soil sample. Press your finger on your palm and rub in a circular motion so that you can really feel the soil texture. At this point, you want to classify how the soil feels into 3 categories:

- **Gritty – A gritty texture has the sensation of rubbing dried sugar or sand between your fingers.**
- **Smooth – A smooth texture feels like rubbing flour between your fingers**
- **Neither – If neither gritty nor smooth texture dominates**

8 – Determine the soil type by comparing it to the Matrix Key. Check the combination of soil ribbon length and texture against our Soil Texture Matrix. By using the rows as classified by ribbon length, and the columns classified by texture, you can determine the soil type. This is comparable to the NRCS soil texture pyramid.

A soil ribbon that is less than 1" in length is typically sandy or silt loam with minimal clay content. A ribbon that is between 1-2 inches long is loam. A ribbon that is longer than 2" long has a heavier clay content.

		Texture		
		Gritty	Smooth	Neither
Ribbon Length	0	SAND		
	0-1 "	Sandy Loam	Silt Loam	Loam
	1-2"	Sandy Clay Loam	Silty Clay Loam	Clay Loam
		Sandy Loam	Silt Loam	Loam
	>2"	Sandy Clay Loam	Silty Clay Loam	Clay Loam



If you cannot form a ribbon, or a ribbon is less than 1", it is Sandy Loam. Otherwise, match up the row and column to your sample!

How accurate is the ribbon test?

The ribbon test will match the correct zone of the NRCS pyramid if the test is performed correctly. It will not tell you precise proportions of sand, clay, and silt. To do that, I recommend that you perform the [Mason Jar Test for Soil Texture](#). As the mason jar test is very accurate, and simple to perform.

More about soils:

<https://www.nrcs.usda.gov/wps/portal/nrcs/site/soils/home/>

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/edu/>

[Home Gardener's Guide to Soils](#)

[Soil Fertility in Organic Systems:](#)