

healthy Gardens

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Pg. 30

Knowing your soils

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Planting Guide...Placing bulbs
perfectly

Improving clay soils



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knowing your *Soils*

By Danielle M. Andrews



The best lawns and gardens have one thing in common — good soil. Soil is often viewed as the boring part of gardening. While garden soil will never be glamorous or even as interesting as choosing plants, there is a whole world under our feet that literally and figuratively is the foundation for our gardens. New gardeners are cautioned to put money and effort into improving their soil before they even consider planting, but few appreciate the wisdom in what they are hearing until they watch their new plants struggling for survival and demanding more and more food and water.

Everything a plant needs is in the soil. The key to supplying nutrients, air, and water to plants is quality soil. Whether you already have it in your garden or have to buy it in a bag, it helps to know your dirt.

Healthy soil starts with the right proportion of sand, silt, and clay (soil texture). Clay holds water and nutrients very well, but is tough for roots to penetrate. The other extreme is sand, which drains very well, but also dries quickly and leaches nutrients. Silty soils are more like clay than sand. The best type of soil for gardening is loam.

A soil texture test allows you to know your soils and be able to choose your plants wisely. You can easily determine your soil texture at home for little to no cost. All you need to do is find the everyday items listed below and follow the simple steps on pages 12 - 14 and for those who like to get down and dirty there are even simpler steps on page 15.

- ✓ Trowel
- ✓ Plastic bag/bowl
- ✓ Old wire mesh sieve/colander
- ✓ Old cookie tray
- ✓ Jar with lid (quart size)
- ✓ Measuring cup (optional)
- ✓ Teaspoon
- ✓ Salt/Dishwashing liquid
- ✓ Water
- ✓ Marker/Sharpie
- ✓ Ruler
- ✓ Calculator

Checklist

What is it?

Identifying texture by measurement



Grinding removes all lumps and clods

1 Collect...

1. Obtain your soil sample by digging down 6". Combine 3 such soil samples, as your soil may be different in different places in your garden
2. Sift soil to remove all rocks, roots, etc using colander/sieve onto cookie tray
3. Finely grind sieved soil in a bowl
4. Place soil in plastic bag or leave in bowl and mix thoroughly

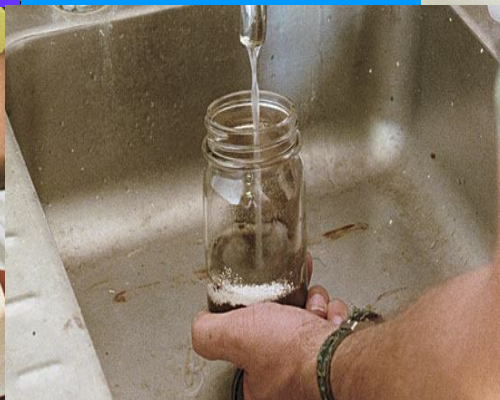
Add & Shake...

1. Fill a quart canning jar 1/4 full (approximately 1/2 cup) of soil
2. Add **either** 1/2 teaspoon of salt **or** 1/2 teaspoon of dishwashing detergent
3. Add water until jar is 3/4 full (1 & 1/2 cups of water)
4. Cap the canning jar and shake hard for 10 -15 minutes
5. Set the jar where it will not be disturbed for 2-3 days

2



Soil particles will settle out according to size



Shaking breaks apart the soil aggregates and separates the soil into individual mineral particles



3

Measure & Calculate...

1. **After 1 minute**, mark with sharpie on the jar the depth of the sand
2. **After 2 hours**, mark depth of silt
3. **When the water clears** mark clay level (Takes 1- 3 days)
4. Measure the thickness of the sand, silt, and clay layers
Thickness of sand ____
Thickness of silt ____
Thickness of clay ____
Thickness of total ____
5. Put the 3 height readings in the form of percentages (see pg. 14)
6. Using the soil texture triangle, find the spot on the diagram that corresponds to the fractions of sand, silt and clay (see pg.14)

Soil texture is COMPLETE!!!!

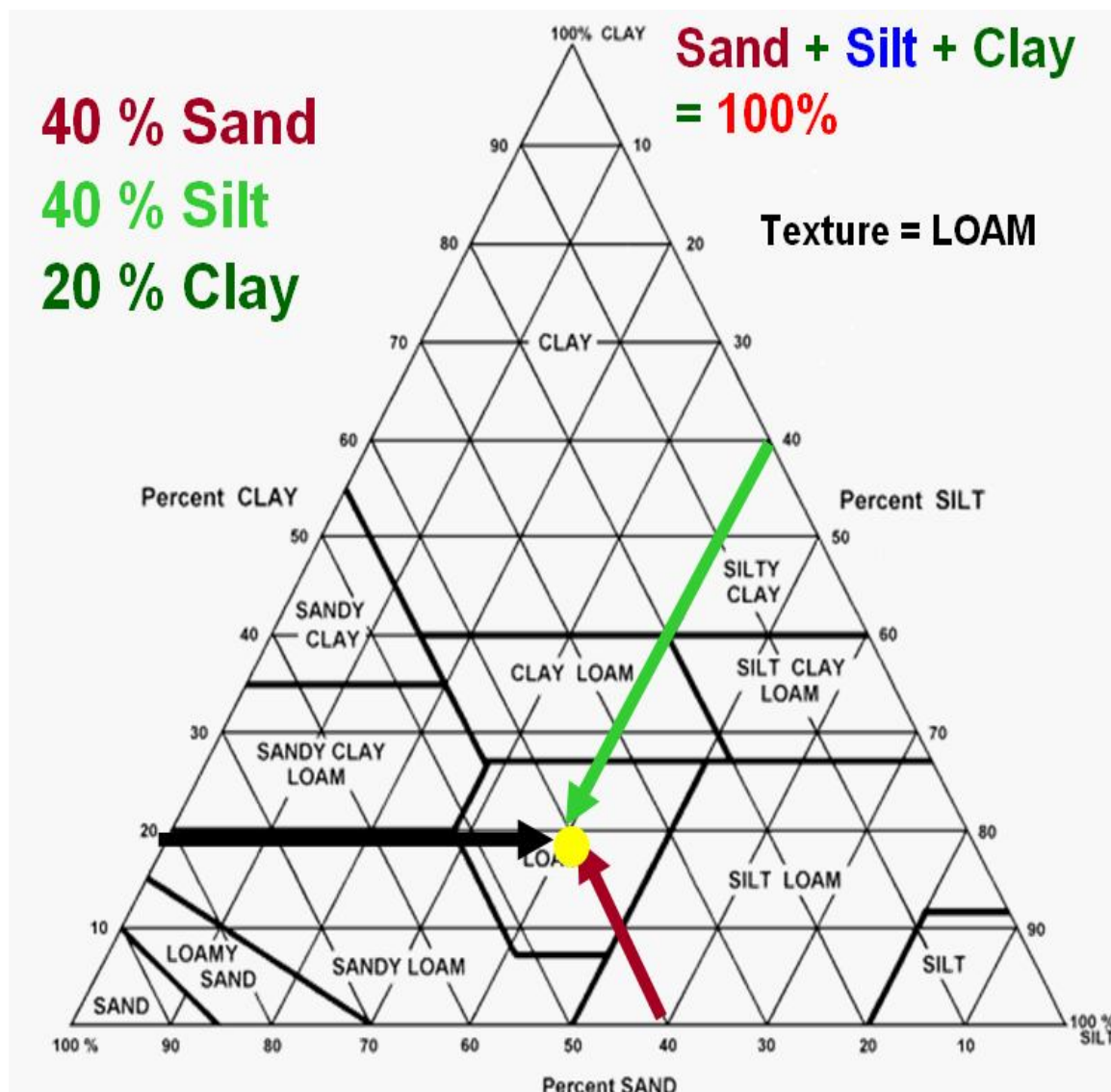
! *Some soils may take weeks for water to clear to determine the clay level...Leave jar undisturbed as long as necessary*



Example worksheet

Height in cm after	Soil fraction	E.g. Total height in cm	Difference in height between fractions	Fractions expressed as percentage
1 minute	sand	4.8 cm	4.8 cm	$4.8/12 * 100 = 40\%$
2 hours	silt	9.6 cm	4.8 cm	$4.8/12 * 100 = 40\%$
2-3 days	clay	12 cm	2.4 cm	$2.4/12 * 100 = 20\%$
			total = 12 cm	

Example: for a soil with 40% sand, 40% silt and 20% clay, the soil texture is **Loam**



Let's get down and dirty

Identifying texture by feel



Ball Squeeze test

Squeeze a moistened ball of soil in your hand

- ✓ Ball forms... go to 2
- ✓ **NO** ball forms... Call it **SAND**

1

Ribbon test (Clay test)

Squeeze the moistened ball of soil out between thumb and finger

- ✓ **NO** ribbon forms... go to 3
- ✓ Ribbon forms...
 - Strong ribbon > 2" ... Call it **CLAY**
 - Medium ribbon 1 - 2" ... Call it **CLAY LOAM**
 - Weak ribbon < 1" ... Call it **LOAM**

Now...GO TO 3



2

Sand & Silt test

If the soil feels:

- ✓ Very gritty: Add **SANDY** to initial classification
- ✓ Very smooth, no gritty feeling: Add **SILT/SILTY** to initial classification

Soil texture is **COMPLETE!!!!**



3

It is very important to realize that soil texture alone does not tell us all we need to know about soils as we try to understand and predict their suitability for different plants.

While knowing your soil's texture allows you to choose plants wisely. You can also make changes to your soil by adding amendments so that the plants you are trying to grow can do their best.

Sources:

- Brian Oram. Wilkes University. www.water-research.net
- Colorado Master Gardener, Factsheet # S14
- Dave's Garden
- Fine Gardening 72, pp. 67-69. Wayne Cahilly
- Kitchen Gardener 26, pp. 22-24. Keith Baldwin
- Viette's beautiful gardens. www.viette.com

Photos: Todd Meier, Ted Sammis & Steve Atkins

Help for poor soils

Homemade compost is the choice for many gardeners. If you are not yet composting, choose quality prepackaged soil amendments:

- ❖ **Composted manure** — an odorless organic farm by-product.
- ❖ **Humus** — decayed organic matter.
- ❖ **Sphagnum peat moss** — completely organic, odorless and natural. Peat moss should not be confused with plain sphagnum moss, which is mostly used by floral designers.
- ❖ **Top soil** — commercially produced compost. Usually only partially decomposed. Because of the rough texture, it is best to use top soil in the yard.
- ❖ **Mushroom compost** — a mixture of straw, peat moss and other organic components.