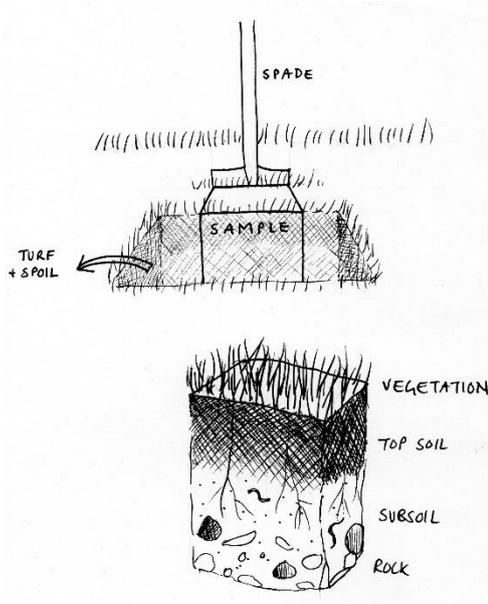


## Soil Testing

### Taking a Soil Profile Sample



The best way to take a soil profile sample is with two large garden spades. The idea is to remove a cross-section of soil with minimal disturbance to its structure. A typical sample is one spade deep and long by about 10cm wide.

Make a note of exactly where the sample was taken and the conditions there. Sketch the sample and make notes about:

#### Structure:

- How much pore space is there?
- Does it crumble easily? Is it 'friable'?
- How big are the crumbs?
- How far do roots penetrate?
- How does the structure differ in the layers?

#### Colour:

- What colour is it? Is it dark or pale?
- Are there different colours in different areas?
- Red=oxidised iron; black & dark brown = humus; black flecks = char; blue/grey= waterlogged; blue/grey with orange flecks = occasionally waterlogged.

#### Smell:

- An earthy smell indicates balanced microbial life.
- Putrid or eggy smell indicates anaerobic activity – waterlogged.

#### Soil Life:

- Roots: do they go straight down or run horizontally?
- Root nodules on legumes?
- Worms, castings, channels?
- Undecayed organic matter at surface?

### Texture Testing

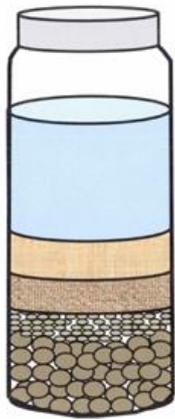
When taking samples to texture test it's best to take soil from about 10cm below the surface.

#### The jar Test

The jar test is an easy way to find out the texture of your soil.

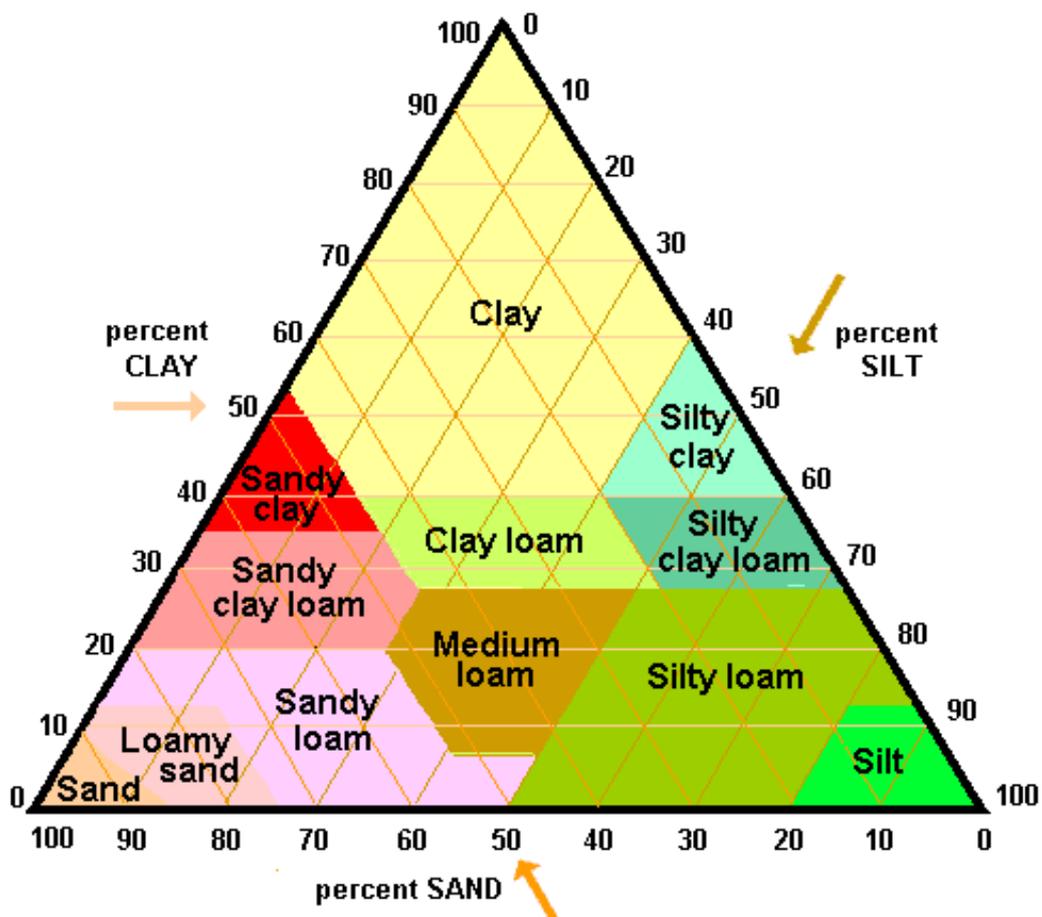
1. Find a large jar, preferably with straight sides.
2. Half fill the jar with soil from you sample area. Break the soil up a bit in your fingers first and remove any large stones or pieces of plant.
3. Fill the jar to the top with water.

4. Put the lid on tightly and shake vigorously for five minutes, until the soil and water are completely mixed. The idea is to break down the structure of the soil and release individual particles from one another.
5. Stand the jar somewhere safe where it won't be disturbed for up to a week.
6. After a couple of minutes the gravel and sand will settle to the bottom as these are the heaviest particles.
7. After a couple of hours the silt will have settled on top of the sand.
8. The clay takes much longer, often several days. When the water has cleared you will know the clay has settled. If after a week the water still isn't clear there is probably something colouring the water and you can go ahead to the next step.



Clay layer – water clears  
 Silt layer – 2 hours  
 Sand layers – 1 minute

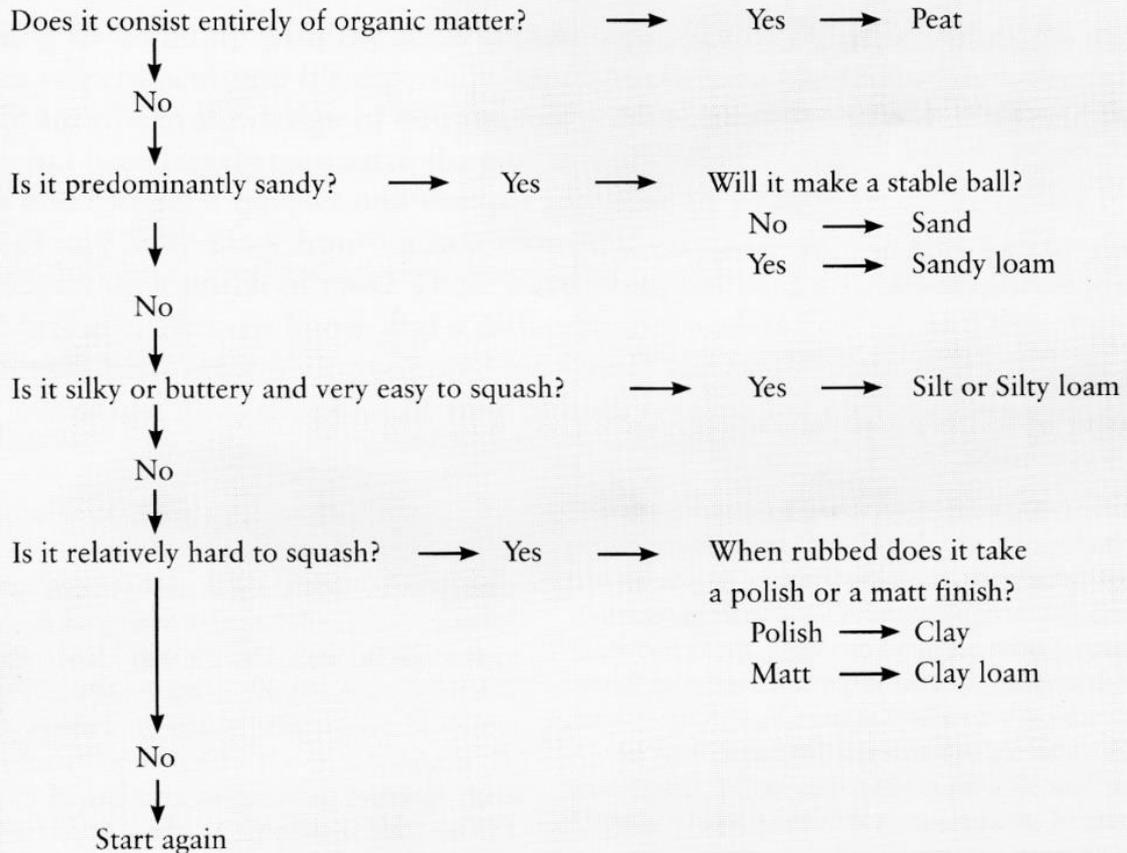
9. Measure the depth of the soil in the jar and make a note of it.
10. Measure the depth of each layer and take note.
11. Divide each layer depth by the depth of the total soil depth and this will give you a percentage.
12. Use the soil pyramid chart to find your soil type by following the arrows with your percentages.



## HOW TO TEST TEXTURE

Take about a teaspoonful of soil, knead it till it loses all structure and roll it into a ball. It needs to be at just the right moisture content to form the strongest ball it can. Too wet and it squidges, too dry and it crumbles. You may need to moisten it and if it's a bit too wet you can dry it by kneading it for longer. In fact if you knead a sample for too long you may need to re-moisten it. It's important to get the moisture content right because a sample that's too wet will feel more silty than it really is.

When you have the strongest ball you can make with that soil ask yourself this series of questions:



One mistake which is easy to make when you start using the finger method is to always answer Yes to the question 'Is it very easy to squash?' All soil is easy to squash and this question is relative. Once you've handled a few contrasting samples you'll get used to it. The feel of a really silty soil is unforgettable once you know it but hard to put into words.

This gives you the basic types, which are certainly enough to get started in soil sampling. But finer distinctions can be significant and you can take it a stage further. A soapy feeling tells you there's some silt in a soil which is predominantly sandy or clayey. This soapy feeling is quite different from the stickiness of clay. If you can feel it in your sample you can redefine it as follows:

Sandy loam    →    Sandy silt loam  
 Clay loam    →    Silty clay loam  
 Clay          →    Silty clay

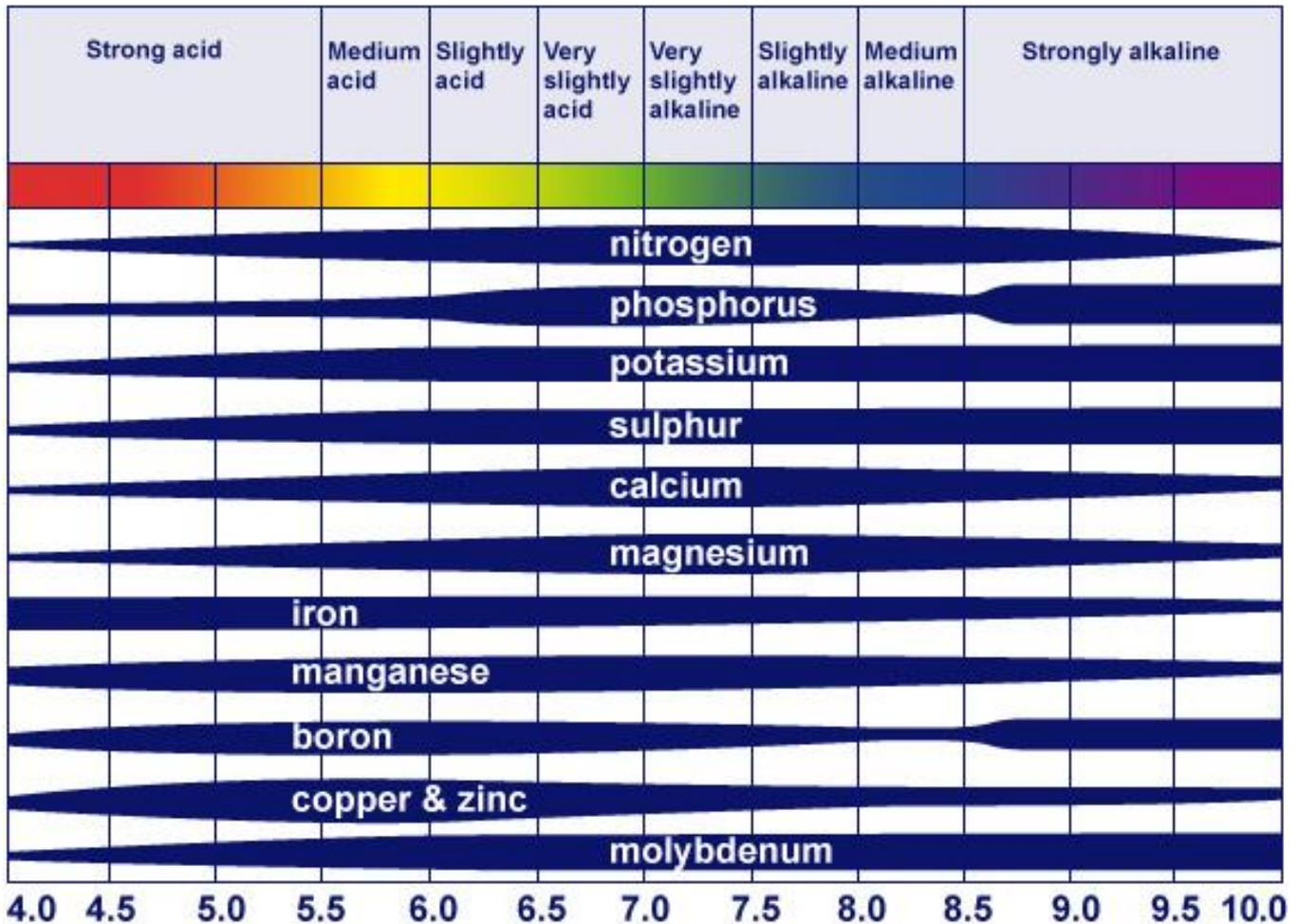
In the same way, if you can feel a bit of sand in a soil which is predominantly clay, you get:

Clay loam    →    Sandy clay loam  
 Clay          →    Sandy clay

## Testing pH

A pH reading will tell you how acid, neutral or alkaline your soil is. If your soil is particularly acidic or alkaline certain minerals in the soil become unavailable to the plants. This is often because the particular microbes which make those minerals available as plant nutrients are unable to function in those conditions. It is helpful to know your soil pH so that you can choose plants that will thrive in your soil, avoid plants that won't and possibly take measures to raise or lower the pH in some areas.

This chart shows how available or unavailable different plant nutrients are at different pH levels.



You can test your soil pH using inexpensive kits from garden centres or online, or you can try the following DIY method:

### Baking soda and vinegar.

1. Collect half a cup of soil from different parts of your garden. Split each sample between two containers.
2. To one container add half a cup of vinegar. If the sample fizzes the sample is alkaline with a pH between 7 and 8. If it doesn't fizz go to the next step.
3. Add half a cup of distilled water to the second container and stir until the soil water is dark and muddy. Add two tablespoons of baking soda and stir gently. If the sample fizzes your soil is acidic, most likely between pH 5 and 6.
4. If your soil doesn't react to either the vinegar or the Baking soda the sample has a pH or around 7 (neutral) and you are very lucky!