

Survey Instructions – Soils

Soil Samples

Soil samples should be taken from close by the individual plants that are at the centre of the quadrats used for the NVC survey. Try not to uproot the target plant when you take the sample, although if the population is dense this may be quite difficult to achieve. If you do uproot any of the target plants, try and replant them at the same location.

Use a screw or cheese-corer auger, or a trowel if you don't have an auger, to collect a 5 x 5 cm (2 x 2 in) patch of soil to a depth of 10 cm (4 in) making sure to take the whole soil profile. If the soil is thinner than 10 cm, stop when you hit a rock or there is another notable change to the subsoil, as plants will not grow in this substrate. Most plants grow in the top 5 cm of soil, but as arable land maybe turned over, the soil profile is usually deeper and more mixed with organic matter. Exclude any vegetation from the sample, but make sure that the very top of the soil is taken.

It is very important to use all of each soil sample, including the very top of the soil, to make sure it is representative of the whole topsoil profile. Occasionally, the bottom of the sample may not be taken cleanly out of the ground or the top falls away – if this happens the sample should be discarded and another taken close by. Firming up the soil by stepping on it prior to taking the sample may prevent this from occurring. Samples from each quadrat should be bulked together, thoroughly mixed and approximately 500 g should be sent away for testing in a labelled bag (500 g is approximately the amount that fits into a jam jar).

Table 1: Soil particle size

Particle size	Particle sub-class	Particle size (mm)
Silt		0.002 – 0.006
Clay		< 0.02
Sand		0.06 – 2.0
Sand	Fine	0.06 – 0.2
	Medium	0.2 – 0.6
	Coarse	0.6 – 2.0

Soil Texture

Soil texture is an important consideration. The particle size has a big impact on physical soil properties such as water retention, workability of the soil and nutrient retention (Table 1). Clay and silt soils have a small particle size and tend to be more water retentive. As a consequence, they retain nutrients, and are usually potassium rich, releasing the mineral continuously even without the application of this element.



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The soil has a smooth appearance, soapy feel and is very slightly sticky. Sandy soils, in contrast, tend to have a lower potassium level but may have higher levels of phosphorous. The grains of sandy soils can easily be seen, even the smaller sand particles. Other particles can affect the feel of a soil – for example, unusual mineralisation in the form of iron oxides and calcium carbonates (such as chalk particles) (Table 2).

To identify the texture of a soil, take a spoonful and wet it, kneading it thoroughly until the crumbs break down and the soil balls into one mass. Enough moisture is needed for the soil to reach its maximum stickiness and it should be rolled between fingers and thumb to detect particle size.

Particle Size	Soil Texture	Description
Small	Silty clays	Adheres to fingers and is very sticky when wet. It has a “buttery” appearance.
	Clays	Forms solid balls when wet and can be rolled into long thread. The soil smears to give a polished surface and is very sticky but does not cling to fingers. Clays so not feel smooth or soapy.
	Sandy clays	Deformation of the ball is difficult when wet and sandy grains can clearly be seen on the surface. Very sticky when wet.
Large	Sandy silt loams	Mould easily due to the silt but feels gritty and soapy. The wet mixture will cling to fingers.
	Sandy loams	Feels gritty and breaks into short threads when rolled out. It will form a deformed ball when moulded together. Slightly sticky when wet.
	Loamy sands	Not sticky but will form a weak ball when wet, which collapses easily. Feels gritty but will retain a “glistening” wet look after water has been applied.
	Sands	Feels gritty and cannot be moulded into a ball when wet, lacking cohesion. Moisture quickly disappears and the surface dries to a matt finish.