Determining slope and soil texture

This fact sheet provides guidance for landholders on determining the slope and soil texture of their land.

Estimating Slope

Slope can be expressed in a number of ways. One is a percentage which can also be converted to the amount of fall over a 100 metre distance. Table 1 shows the conversion of percent slope to fall over 100 metres. A visual assessment can be made using the amount of fall over 100 metres and converting back to a percentage.

A clinometer can be used for a more accurate measurement of slope. Clinometer apps are available for smartphones. A dumpy level can also be used to accurately determine the fall over 100 metres or more (or less).

Percent slope	Amount of fall over a 100 metre distance
0%	Flat with no fall
1%	1 metre
3%	2 metres
8%	8 metres
25%	25 metres

Slope may also be determined using a GPS or topographic map. To determine the slope using a topographic map you will need the rise (the difference in elevation between two points) and the run (the distance between two points calculated using the map scale). Slope can then be determined with the following calculation: rise / run x 100 = % slope

Assessing soil texture

Soil texture refers to how coarse or fine the soil is: that is, how much sand, silt and clay it contains. Texture has a major influence on how much water a soil can hold. Generally, the smaller and finer the soil particles (the more silt and clay), the more water a soil can hold, and the less susceptible it is to wind erosion with adequate rainfall. Soil texture can be estimated by hand using the ribboning technique, noting that it takes practice to produce a consistent result.

Carry out this ribbon test on a sample of soil from the area to be cleared using the Code. If soil differs across the area to be cleared, assess each area separately. Do this several times for confirmation and compare the average ribbon length with those in Table 4 below. Each soil texture is classified within a ribbon length range (for example, sandy clay loam ribbon length is 25 to 40 mm long). Once a consistent ribbon length is being produced, you can be reasonably confident that the correct soil texture has been identified.

Want to know more?

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Email us: slm.info@lls.nsw.gov.au

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Assessing soil texture using the ribbon test

1. Take a small handful of soil.

2. Add enough water to make a ball. If you can't make a ball, the soil is very sandy.

3. Feel the ball with your fingers to find out if it is gritty (sand), silky (silt) or plastick/sticky (clay).

4. Reroll the ball and with your thumb gently press it out over your forefinger to make a hanging ribbon.

5. If you can make a short ribbon, your soil texture is loamy, a mixture of sand and clay.

6. The longer the ribbon, the more clay is in your soil.

Broad groups	Texture grade	Behaviour of the soil	Ribbon (mm)
Sands	Sand	Ball will not form	0
	Loamy sand	Ball just holds together	5
	Clayey sand	Ball forms, sticky-clay stains fingers	5-15
Sandy loams	Sandy loam	Ball forms, feels sandy, but spongy	15-25
	Silty loam	Ball forms, feels smooth & silky	25
Loams	Loam	Ball forms, feels smooth & spongy	25
	Sandy clay loam	Ball is firm, feels sandy & plastic	25-40
Clay loams	Silty clay loam	Ball is firm, smooth, silky, plastic	40-50
	Clay loam	Ball firm, feels smooth & plastic	40-50
Clays	Light clay	Ball very strong, feels plastic	50-75
	Medium clay	Ball very strong, feels like plasticine	75+
	Heavy clay	Ball very strong, stiff plasticine	75+