

Appendix 13

Simple Soil Testing Procedures

A13.1 Introduction

This appendix contains instructions on how to carry out some simple soil tests that will help you understand more about the characteristics of the soil you are working with. It includes instructions on how to identify the different soil layers, and tests for composition, dispersible clays, structure/compaction and infiltration.

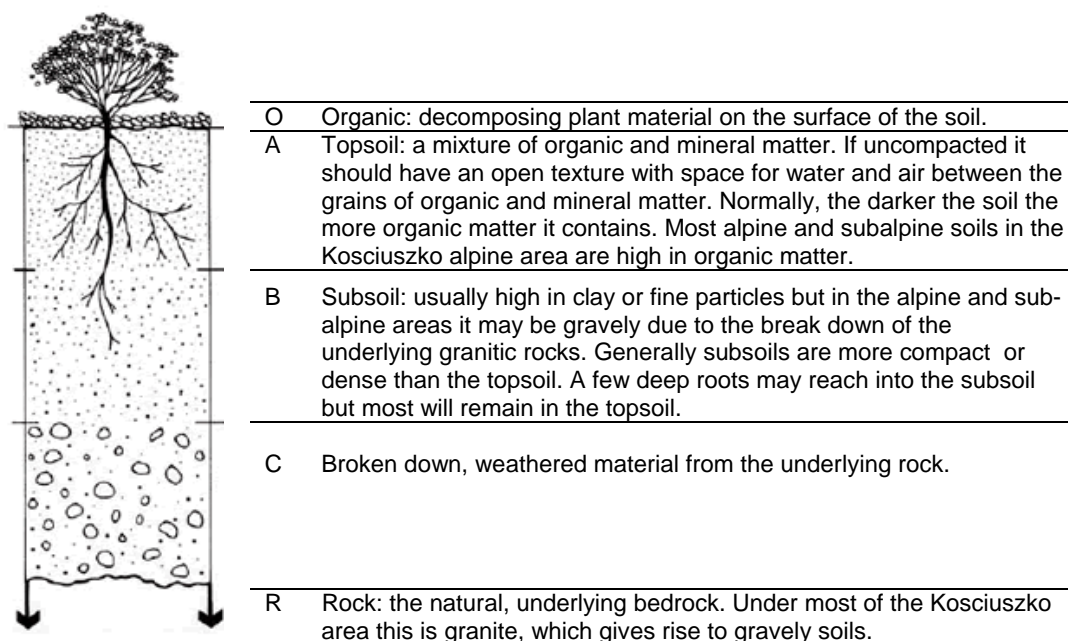
pH testing can also be easily carried out using a commercially available kit and following the enclosed instructions.

A13.2 Identifying the Different Soil Layers

As shown in Figure A13.1, most soils are made up of distinct layers, each of which has different characteristics. For plant growth it is the topsoil that is most important as this is where conditions are optimal for roots to develop and take up water and nutrients. All testing should be carried out on samples of topsoil.

In some soils, one or more of the horizons or layers shown in Figure A13.1 may be absent. In disturbed areas, often the topsoil is absent or degraded. You should try to identify the topsoil on your site and how thick it is, to determine whether there is an adequate amount for plant establishment or whether other strategies will be necessary to prepare the soil for planting.

Figure A13.1 The main soil layers or 'horizons' in the Kosciuszko area



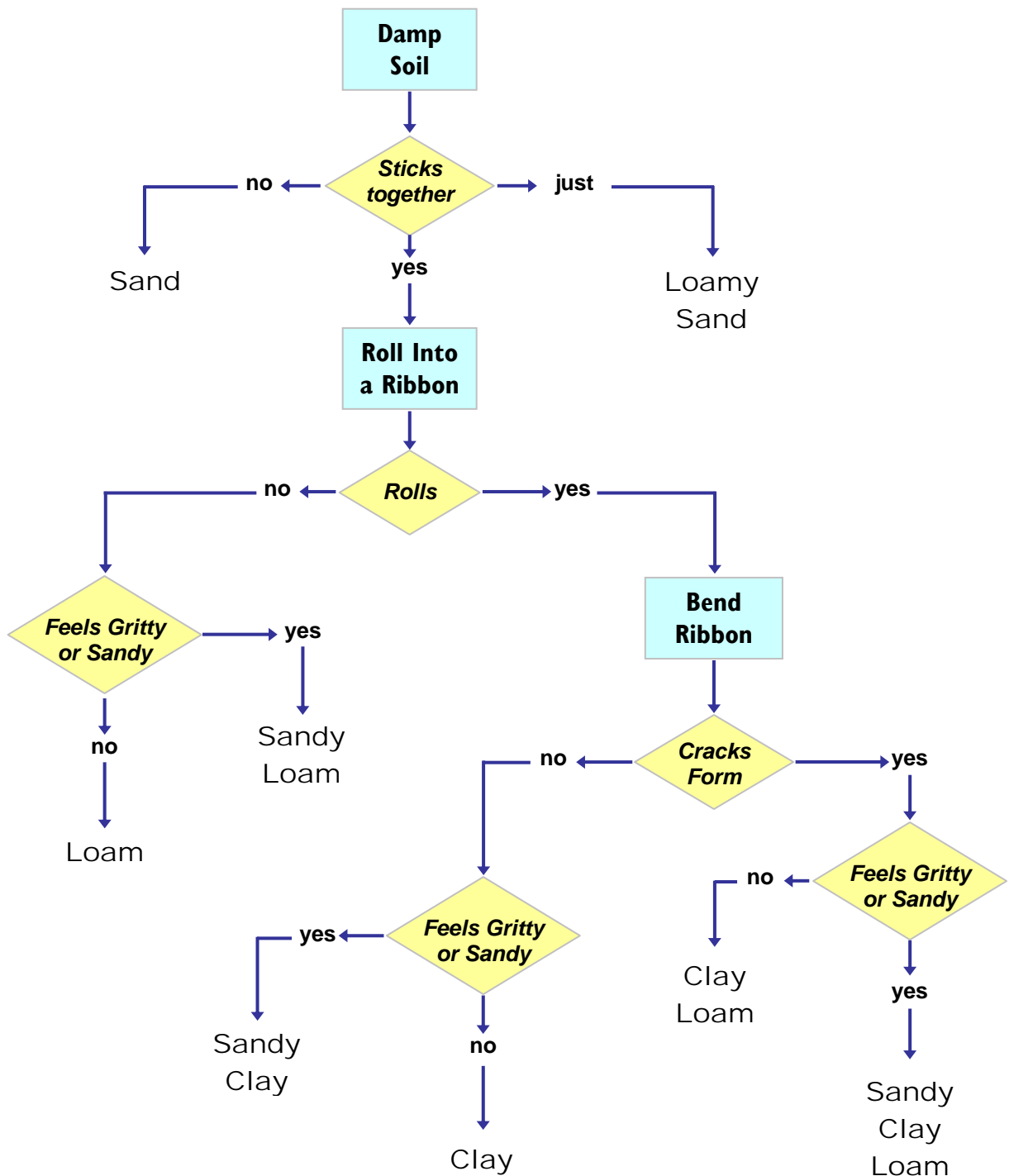
A13.3 Soil Tests

I. Soil Composition Ribbon Test

This test gives you an idea of the composition of your soil sample, that is, the relative proportion of sand, silt and clay that it contains. Knowing the composition of the soil will give you some idea how it will behave, including its erodibility.

Instructions:

- i) Take a small handful of soil and dampen it enough so that it sticks together but is not oozy. It should have a similar consistency to plasticine or putty.
- ii) Roll it around in your hands and work your way through the following flowchart to identify the soil type:



II. Simple Test for Dispersibility

If your soil contains a large amount of clay, you may wish to test for dispersibility. Dispersible clays are clays which virtually dissolve in water and, because they are very fine, they easily pass through most sediment barriers. You can easily test to see whether the material you are using as a sediment barrier is adequate using the following test.

Instructions:

- i) Line a funnel with a piece of the sediment barrier material and sit this over a large jar.
- ii) Mix about half a cup of your soil sample with 1.5 cups of water – shake it vigorously.
- iii) Pour the water into the funnel and allow it to filter through. You may need to leave it overnight for all the water to pass through.
- iv) In the morning, remove the funnel and look at the water. Is it very cloudy? If so, it probably contains a large amount of dispersible clay which will pass through your sediment barriers. If this is the case, you may need to use a more sophisticated sediment retention system incorporating settling ponds.

III. Simple Test for Compaction

If soils are too compact it will be difficult for plants to establish. A good soil should have a crumbly texture (like breadcrumbs). Compaction can easily be tested by pushing a pencil into it with a normal, steady force. If the pencil goes in reasonably easily, the soil is not too compact. If you really have to push hard to make the pencil go in, you will need to cultivate the soil to loosen it up. The addition of sterile organic matter will also help reduce compaction.

IV. Infiltration Test

This is a simple test to see how well water soaks into the soil. Some soils have a poor absorption capacity resulting in increased runoff and erosion, while the soil itself is dry.

Instructions:

- i) Prepare a can by removing both ends.
- ii) Draw a line around the perimeter of the can, 3 cm from one end, using a permanent marker.
- iii) Push the can 3 cm into the soil, until it reaches the line encircling the can.
- iv) Quickly fill the can with water.
- v) Time how long it takes for the water to soak completely into the soil.

It may take up to 10 minutes or longer for all the water to soak into a very compact or water repellent soil. More absorbent soils will soak up all the water in only a minute or two.

V. pH

To test the pH (acidity) of the soil, simple kits can be acquired from most landscaping/gardening suppliers.

