Soil Survey

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SOIL SURVEY.

1. In this State we are concerned with two types of soil survey. -

   (a) The Coastal Plain - for establishing Pinus pinaster plantations.

   (b) The Darling Range - for Pinus radiata plantations.

2. When considering a soil survey, we must never lose sight of what we are looking for, and what we expect the results of a soil survey to tell us. We want country that will grow F.A.Q. pines, and the survey should show the area of suitable available country.

   (a) Coastal Plain Areas:

      (i) Generally, all soils we find on the coastal plain will be sandy, for example McLarty Plantation.

      (ii) First we try to separate the swampy areas which are too wet for growing pines from the rest of the area.

      (iii) Once this is done, we separate the yellow sands from the deep grey sands, since we know that yellow sands generally will produce better pines than the deep grey sands. This applies to Myalup, McLarty, and Ludlow plantations in particular.

      (iv) The yellow sands form the Limestone Zone of soils, while the deep grey sands form the Median Zone.

   (b) Darling Range Areas:

      (i) The Forests Department is concerned with three groups of soils in the Darling Range -

         (a) Basic Soils.
         (b) Granitic Soils (Acid Soils).
         (c) Laterites.

         (a) Basic soils have, so far, produced our best forests of Pinus radiata, such as Greystones, Compartment 3 (Mundaring Plantations) and a portion of the Grimwade area. They are red soils, usually a fairly dark red, with a fairly high content of clay. Whenever you see a soil in State Forest which appears to be a basic soil, you should report its location to the district officer.

         (b) Granitic Soils have also produced good forests of Pinus radiata, and although they are not as good as basic soils, they can usually be

expected to produce F.A.Q. pines, (see Foresters' Manual for definition of F.A.Q. stands). Granitic soils have brown or dark brown surface horizons with a yellow brown clay at two or three feet beneath the surface.

(c) Lateritic Soils are not planted with pines, since they will not produce a good forest of Pinus radiata or Pinus pinaster. They occur as "Buckshot" gravels, silt washes, and as Massive caps on ridges.

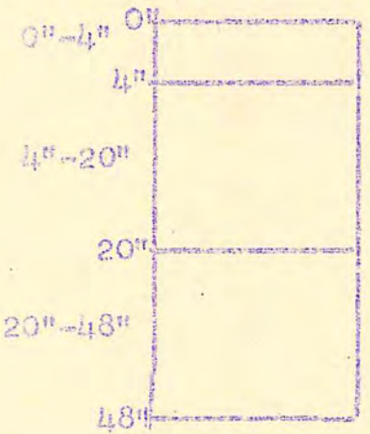
3. Describing a Soil Profile in the field.

(i) Freshly exposed road cuttings are often available in an area which is being examined. Where there are no cuttings, a soil may be examined in two ways :-

(ii) Soil Pit.

Dig a pit which is big enough to stand in, and which is at least 4 feet deep. One face of the pit should be vertical and will show the various layers or horizons of the soil. Record in the field book, everything that you notice in the appearance of each layer, and the depth at which they occur.

e.g.



Very dark brown, sandy loam.

Brown loam plus gravel. (gravel small, about $\frac{1}{8}$" across).

Yellow brown, sticky, mottled clay, plus rock fragments.

ROCK.

(iii) Auger Hole.

Especially in sandy areas, an auger with a couple of extensions can be used to quickly bore a hole to six feet or more. As you remove each "auger-full" from the hole, place the contents on the ground in sequence. By placing them in a circle, consecutively, you will have a picture of the profile. Description of the soil is recorded in the same manner as for a pit, remembering that each auger-full represents approximately 4" in depth.

(iv) Descriptions.

(a) Colour: If no colour chart, or colour book is available, take a sample, (a small handful is ample) of each new colour you find, place it in a paper bag, and label it with a number, the location of the hole, the depth at which you found it, your own idea of its colour and texture, and the date it was collected. By this means you can check the colour as soon as a colour book is available, without having to return to the hole again.

(b) Texture: As for doubts over colour descriptions, so also you should keep a sample of any soil whose texture is a problem. The texture can be checked by reference to a soil surveyor or the Research Officer, at Dwellingup.

(c) It is a good idea to record in your profile description, the presence of gravel, grit, or rock fragments. Also, mention whether the soil is loosely packed, or hard and tightly packed, and always make a note of water appearing in the bottom of the hole while you are digging.

4. Scale Models of Soil Profiles.

If time and equipment are available, a model of the profile, together with your field description of it, will be very valuable. Models are made one eighth actual size, that is, a profile 8 feet deep can be modelled on a strip of wood one foot long.

(i) Equipment.

Glue	- "Casco" glue for Darling Range Soils. - "Clam" paste for sands.
Model Base	- 3-ply or cardboard strips, 1" wide and at least 10" long.
Miscellaneous	- Camel-har brush. - Ruler and pencil.
Soil	- DRY soil samples.

(ii) Mark off the horizons of the profile on the strip, reducing all measurements to one eighth. Apply glue to top horizon mark, sprinkle soil onto glue, and then remove surplus soil from next horizon before continuing down the profile.

(iii) When glue and soil have been placed in their correct position, set the strip aside for at least 24 hours. This gives the glue time to move through some of the soil, and to dry out. After 24 hours, shake off surplus soil, and the model is complete.

(iv) Make sure to get a continuous profile model by carefully pushing the glue of each successive horizon into contact with the bottom of the one above, otherwise there will be a gap between layers, giving the model a step-ladder effect.

(v) Label each model and always prepare three copies. One for the local Divisional Office, one for the Research Station at Dwellingup, and one for the Head Office collection.