Chapter C3. Transitional red brown earths

PURPOSE OF THIS CHAPTER

To describe the characteristics of transitional red brown earths

CHAPTER CONTENTS

- appearance
- topography and vegetation
- land-use limitations and soil problems

ASSOCIATED CHAPTERS

- Part C

TRANSITIONAL RED BROWN EARTHS

The problems with plant growth experienced in transitional red brown earths are similar to those seen with red brown earths. However, these problems are more likely in transitional red brown earths because of shallow topsoils and finer (more clayey) texture.

APPEARANCE

Transitional red brown earths differ from red brown earths in that they have:

- shallower, often more clayey topsoils
- more clayey, deeper subsoils.

Transitional red brown earths are a specific subgroup of red brown earth soils. The difference between transitional red brown earths and red brown earths is that transitional red brown earths have a shallow topsoil (A horizon) of 5 to 10 cm of clay loam, whereas red brown earths possess deeper A horizons (10 to 40 cm in depth), usually of lighter texture.

The colours of the topsoil and subsoil are much the same as those described for red brown earths; red brown is the most common colour.

The deep subsoil of the transitional red brown earth is likely to be more clayey than that of a red brown earth, since transitional red brown earth soils are formed on finer sediments than red brown earths. For the same reason, topsoils are shallower and of more clayey texture than red brown earths.

TOPOGRAPHY AND ASSOCIATED VEGETATION

Transitional red brown earths are usually found near flood plains. However, transitional red brown earths also occur in association with self-mulching soils in gilgais or small mounding complexes. The transitional red brown earths are located on the shelf (slightly depressed areas) of the gilgai complex.

The natural vegetation most likely to be found on transitional red brown earths is:

- boree
- western grey box (in better-drained transitional red brown earths)
- black box (in poorly drained areas, often in a gilgai formation).

LAND-USE LIMITATIONS AND SOIL PROBLEMS

Most of the same physical restrictions to plant growth found in red brown earths are likely to be a problem in transitional red brown earths. Problems are:

- low subsoil permeability
- high subsoil bulk density
- high mechanical resistance to root growth
- low air-fill porosity (lower amount of pore space in which air and water can move)
- hardsetting topsoils.

The topsoils of transitional red brown earths are shallower and of finer texture than those of red brown earths. Waterlogging is more likely in transitional red brown earths because of the shallower topsoil.

The subsoils of transitional red brown earths may be of heavier texture than those of red brown earths and therefore may be more dense and impermeable, especially if sodic. Therefore, low permeability of the subsoil may reduce plant growth through waterlogging and poor aeration. These subsoils are also prone to compaction when wet.

When factors such as soil strength and poor aeration are taken into account the soil will have a very narrow range of water contents at which the roots can grow unimpeded by high soil strength or poor aeration.

The comparatively poor chemical and physical properties of the transitional red brown earths mean that farmers must improve the soils natural fertility if vegetables are to be produced economically.

Techniques that improve the structure of these soils improve production and the range of crops that can be grown on transitional red brown earths. For example, gypsum will temporarily improve structure and therefore improve the aeration, infiltration and permeability of transitional red brown earths, allowing increased plant production on these soils.