

Chapter C4. Alluvial soils

PURPOSE OF THIS CHAPTER

To describe the characteristics of alluvial soils

CHAPTER CONTENTS

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

ASSOCIATED CHAPTERS

- Part C

ALLUVIAL SOILS

Most of the fresh market and processing vegetables produced in the Macquarie and Lachlan Valleys are grown on the alluvial soils of the river flats and terraces.

Although there is some cropping on the clay black earths and alluvial sands, most vegetable production is on alluvial soil generally described as:

- prairie soils
- earthy loams
- layered alluvial loams (in the Lachlan Valley).

APPEARANCE

Alluvial soils have a range of features. The following descriptions are typical of the main soil profiles used for vegetable production.

Texture and colour: prairie soils

The topsoil is a black loam to clay loam with moderate crumb structure and pH 7.0 to 30 cm depth.

The subsoil in the Macquarie Valley is a blocky light clay, moderately structured with pH 7.5 overlying highly plastic brownish black clay.

In the Lachlan Valley the subsoil is a strongly structured reddish brown silty clay loam that can alter at 2 m to a dark yellowish brown silty clay loam with moderate structure.

Texture and colour: earthy loams

The earthy loams in the Macquarie Valley have a brownish black loam to clay loam with weak structure and pH 6.0 to 15 cm. The subsoil is a black clay loam with weak structure and pH increasing to 8.5 with depth.

In the Lachlan Valley the topsoil can be to 1 m depth of dark brown to brownish black silt loam, weak to moderately structured with a pH of 7.0.

The silt loam continues in the subsoil, with minor but distinct orange mottling at 1.2 m. The pH ranges down to 6.0 with depth. Note that these soils can extend to 3 m with little change in colour or texture.

Texture and colour: layered alluvial loams

The topsoil is dark brown to brown loamy sand to fine sand loam with weak structure, and is apedal massive or single grained. The pH is 6.0 to 8.0.

The subsoil is brown sandy clay loam with weak structure. The pH is 7.5 to 8.0.

TOPOGRAPHY AND ASSOCIATED VEGETATION

Macquarie Valley

In the Macquarie Valley there are alluvial plains and terraces with local relief (or local altitude variance) of often less than 10 m. Other elements, including backplains, swamps, channels, floodouts, ox-bows, levees and point bars, occur along the Macquarie River and on the Belubula River flood plain. The soil landscape varies from 100 to 1000 m wide, usually less than 300 m on the smaller alluvial plains along creeks. Slopes are level to 3% and are steeper on the slopes of terraces. The alluvial channels tend to be slowly migrating, except on narrow alluvial plains.

An open savannah grassland with yellow box is the dominant native vegetation.

Lachlan Valley

The Lachlan Valley has alluvial plains and terraces with local relief less than 20 m. They vary in width from 50 to 300 m in areas bounded by steep slopes, to as wide as 3200 m on some flats along the Lachlan River. Slopes range from level to 3%. Terraces are often found beside deeply incised river channels with back plains.

White and grey box are the dominant native vegetation.

LAND USE LIMITATIONS/SOIL PROBLEMS

The alluvial river flats generally fit into the Class 1 land-use category, as they are most suitable for intensive cropping, with good natural physical and chemical soil properties.

The Macquarie River earthy loams can be hardsetting on the surface, with some patches of imperfect drainage, but generally the alluvial soils are loose at the surface, well drained and permeable, with good water-holding capacity. The watertable is generally deeper than 2 m, and salinity is not a major concern.

Flooding is the major concern in these districts; it causes crop losses and spreads soil-borne diseases. This is a particular problem in the Macquarie Valley with brassicae crops.

Seedling emergence on the earthy clay loams that hardset on the surface in the Macquarie Valley can be restricted. This problem can be managed correctly through practices like reducing cultivation and increasing organic matter.