

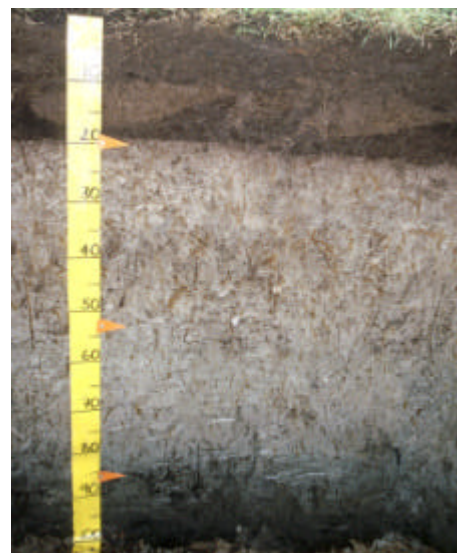
Soil name: **Titipua**

Overview

Titipua soils occupy about 4,000 ha on stream flood plains and margins of peat swamps across southern and eastern Southland. They are formed into fine alluvium with a thin covering of peat although, under pasture, the organic matter has typically broken down into a slightly peaty topsoil. These soils are moderately deep to deep, poorly drained, and have silty to silty clay textures. Present use is pastoral grazing with sheep, dairy and beef cattle. Climate is cool temperate with regular rain.

Physical properties

Titipua soils have a deep rooting depth and very high available soil water, although the rooting depth may be limited by poor aeration during wet periods due to the poor drainage and slow subsoil permeability. Texture is variable between silt loam to silty clay, and topsoil clay content varies between 15 and 50%. The soils are typically stone free, although the moderately deep phase will have gravels between 45 and 90cm depth.



Titipua profile

Fertility properties

Topsoil values are influenced by the peat content and are variable. Organic matter content is 18–80%; P-retention 54–75% and pH low (4.1–5.6). Cation exchange is very high, reflecting the peat influence, and base saturation low. Available calcium and magnesium levels are moderate with postassium low. Soil reserve phosphorus is low. Micronutrient levels are generally adequate.

Associated and similar soils

Some soils that commonly occur in association with Titipua soils are:

- Tisbury: deep poorly drained soil on terraces in southern Southland; typically has silt loam topsoils, but does include soils with slightly peaty topsoils
- Pukemutu: poorly drained soil formed in loess on terraces; has a fragipan
- Woodlands: imperfectly drained soil formed in loess on terraces

Some soils that have similar properties to Titipua soils are:

- Dacre: moderately deep to deep soil with silty textures
- Makarewa: moderately deep to deep soil with clayey textures
- Invercargill: deep soils formed in peat

Sustainable management indicators

Note: the vulnerability ratings given in the table below are generalised and should not be taken as absolutes for this soil type in all situations. The actual risk depends on the environmental and management conditions prevailing at a particular place and time. Specialist advice should be sought before making management decisions that may have environmental impacts. Where vulnerability ratings of Moderate to Very severe are indicated, advice may be sought from Environment Southland or a farm management consultant.

Vulnerability factor	Rating	Vulnerability compared to other Southland soils
Structural compaction	minimal	These soils have minimal vulnerability to structural degradation by long-term cultivation, or compaction by heavy stocking and vehicles. This rating reflects the high organic matter content, with moderate to high P-retention and clay content offsetting the poor drainage.
Nutrient leaching	slight	These soils have a slight vulnerability to leaching to groundwater. This rating reflects the slow permeability, poor drainage, and very high water-holding capacity.
Topsoil erodibility by water	slight	Due to the high organic matter content and moderate to high clay content, topsoil erodibility in these soils is slight. Erodibility is highly dependent on management, particularly when there is no vegetation cover.
Organic matter loss	minimal	Vulnerability to long-term decline in soil organic matter levels is partly dependent on soil properties and highly dependent on management practices (e.g., crop residue management and cultivation practices).
Waterlogging	severe	These soils have a severe vulnerability to waterlogging during wet periods. This rating reflects the poor drainage and slow permeability.

General landuse versatility ratings

Note: The versatility ratings in the table below are indicative of the major limitations for semi-intensive to intensive land use. These ratings differ from those used in the past in that sustainability factors are incorporated in the classification. Refer to the Topoclimate district soil map or property soil map to determine which of the soil symbols listed below are applicable, then check the versatility ratings for that symbol in the appropriate table.

TpU1 (Titipua undulating deep)

TpU2 (Titipua undulating moderately deep)

Versatility evaluation for soil TpU1, TpU2		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Limited	Inadequate aeration during wet periods; risk of short-term waterlogging after heavy rain.
Arable	Limited	Inadequate aeration during wet periods; risk of short-term waterlogging after heavy rain.
Intensive pasture	Limited	Subsoil acidity; risk of short-term waterlogging after heavy rain.
Forestry	Limited	Inadequate aeration during wet periods; potential flood risk

Management practices that may improve soil versatility

- Careful management after heavy rain and wet periods will reduce the impact of short-term waterlogging. Intensive stocking, cultivation and heavy vehicular traffic use should be minimised during these periods.
- Installation and maintenance of drainage systems will lower the watertable, reducing the risk of limitations of short-term waterlogging and sustained inadequate aeration.