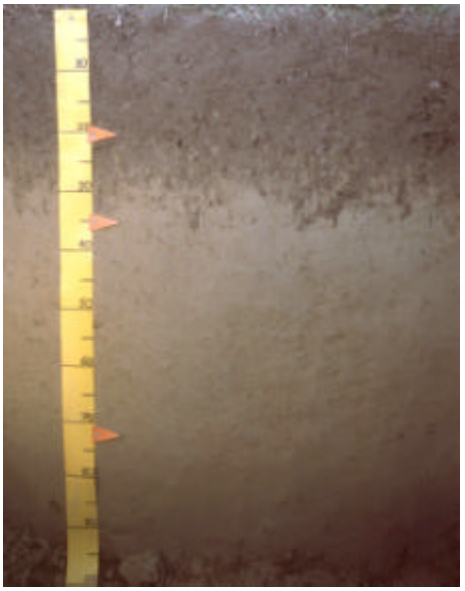
Soil name: Tuturau

Overview

Tuturau soils occupy about 11,500 ha on terraces and downland mainly on the east of the lower Mataura valley between Gore and Waimahaka. They are formed in near-source wind-deposited loess derived from greywacke and schist rock. Tuturau soils are well drained, have a deep rooting depth, high water holding capacity, and loamy silt textures with P-retention between 25 and 60%. They are high producing soils currently used for intensive sheep and dairy production, with some cropping. Climate is cool temperate with regular summer rain, so soils seldom drying out.



Tuturau profile

Physical properties

Tuturau soils have a deep rooting depth and high plant-available water, meaning there is no significant physical barrier to root growth. The soils are well drained and have good aeration. Texture is light silt loam in the topsoil and loamy silt in the subsoil, with topsoil clay content of 15–25%. Tuturau soils are typically stone free.

Fertility properties

Topsoil organic matter content is 5–10% and P-retention 25–50%. Profile pH values are moderate, with some profiles having values below 5.4 in the subsoil. Cation exchange and base saturation values are moderate in upper horizons and low to very low in the subsoil. Natural reserves of phosphorus are low and sulphate sulphur levels high in the subsoil. Micro-nutrient levels are generally adequate.

Associated and similar soils

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

- Wyndham: imperfectly drained equivalent of the Tuturau soil
- Jacobstown: poorly drained floodplain soil, due to a high groundwater table

Some soils that have similar properties to Tuturau soils are:

- Waimahaka: similar soil south of Waimahaka; shows greater weathering, with higher P-retention, and found in complexes with soils that show podzolised properties.
- Crookston: occurs in northern Southland and west Otago; has silt loam textures
- Tokanui: occurs on rolling to hilly land in more distal source loess; has heavy silt loam texture and is more weathered, with yellow-brown colours and P-retention of 60–80% throughout the profile.
- Edendale: occurs on intermediate terraces; has heavy silt loam texture and is more weathered, with yellow-brown colours and P-retention of 60–80% throughout the profile.

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	moderate	These soils have a moderate vulnerability to structural degradation by long-term cultivation, or compaction by heavy stocking and vehicles. This rating reflects the light silt loam texture and low P-retention.
Nutrient leaching	moderate	These soils have a moderate vulnerability to leaching to groundwater. This rating reflects the high water-holding capacity, but is offset by the good profile drainage.
Topsoil erodibility by water	moderate	Due to the light silt loam texture, the topsoil erodibility of these soils is moderate. Erodibility is highly dependent on management, particularly when there is no vegetation cover.
Organic matter loss	slight	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	slight	These soils have a slight vulnerability to waterlogging during wet periods. This rating reflects the good drainage.

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.

TuU1 (Tuturau undulating deep)

Versatility evaluation for soil TuU1		
Landuse	**Versatility rating**	**Main limitation**
Non-arable horticulture	High	Few limitations
Arable	High	Few limitations
Intensive pasture	Moderate	Moderate vulnerability of leaching to ground water
Forestry	High	Few limitations

TuR1 (Tuturau rolling deep)

Versatility evaluation for soil TuR1		
Landuse	**Versatility rating**	**Main limitation**
Non-arable horticulture	Moderate	Rolling slopes
Arable	Limited	Rolling slopes
Intensive pasture	Moderate	Moderate vulnerability of leaching to ground water
Forestry	High	Few limitations

TuH1 (Tuturau hilly deep); TuH2 (Tuturau hilly moderately deep)

Versatility evaluation for soil TuH1; TuH2		
Landuse	**Versatility rating**	**Main limitation**
Non-arable horticulture	Unsuitable	Hilly slopes
Arable	Unsuitable	Hilly slopes
Intensive pasture	Limited	Hilly slopes
Forestry	Limited	Restricted rooting depth

TuS1 (Tuturau steep deep) and **TuS2 (Tuturau steep moderately deep):** as for hilly phase above, but versatility rating for forestry landuse is 'Limited' and steep slopes are the main limitation for all landuses.

Management practices that may improve soil versatility

- Careful management after heavy rainfall and wet periods will reduce the impact of short-term waterlogging. Intensive stocking, cultivation and vehicular traffic should be minimised during these periods.
- Organic matter levels should be carefully maintained and enhanced
- Management of nutrient applications so as to minimise leaching losses.