

This Information Sheet describes the *typical average properties* of the specified soil. It is essentially a summary of information obtained from one or more profiles of this soil that were examined and described during the Topoclimate survey or previous surveys. It has been prepared in good faith by trained staff within time and budgetary limits. However, no responsibility or liability can be taken for the accuracy of the information and interpretations. Advice should be sought from soil and landuse experts before making landuse decisions on individual farms and paddocks. The characteristics of the soil at a specific location may differ in some details from those described here.
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Soil name: **Te Mara**

Overview

Te Mara soils occupy about 2,300 ha on undulating to rolling downs and hills in the mid Waiau valley and adjacent to Winton. They are formed into mixed loess and fine colluvium from limestone and calcareous siltstone. Soils are imperfectly drained, with deep rooting depth and moderately high plant available water. Present use is pastoral grazing with sheep and cattle and some deer. Climate is cool temperate with regular rainfall.

Physical properties

Te Mara soils have a deep rooting depth and moderately high plant available water. The soils have compact lower subsoils that are slowly permeable, causing the soils to be imperfectly drained. Textures through the profile are heavy silt loam to silty clays, with a topsoil clay content of 30–45%. Deep soils are stone free, with bedrock or gravelly colluvium between 45 and 90cm in moderately deep soils.

Fertility properties

Topsoil organic matter levels are 6–10%, P-retention 30–40% and pH high (>6.4). Soil pH increases down the profile. Cation exchange is high and base saturation very high because of the limestone influence. Available calcium, magnesium and potassium levels are all moderate to very high. Reserve phosphorus levels are low. Micronutrient levels are generally adequate. The soil fertility will vary depending on the amount of fine limestone colluvium in the profile.

Associated and similar soils

Some soils that commonly occur in association with Te Mara soils are:

- Pukemutu: deep, poorly drained soil due to water perching on a fragipan
- Isla Bank: deep, well drained soil formed into loess overlying limestone
- Kauana: shallow soil onto limestone bedrock
- Mclvor: shallow soil onto limestone in the Monowai area, and should be correlated into the Kauana series

Some soils that have similar properties to Te Mara soils are:

- Aparima: imperfectly drained soil formed into deep loess with a fragipan



Te Mara 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 high clay content, offset by imperfect drainage and low P-retention.
Nutrient leaching	moderate	These soils have a moderate vulnerability to leaching to groundwater. This rating reflects the moderate water-holding capacity and imperfect drainage.
Topsoil erodibility by water	minimal	Due to the 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	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	moderate	These soils have a moderate vulnerability to waterlogging during wet periods. This rating reflects the imperfect 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.

TcH1 (Te Mara hilly deep)

Versatility evaluation for soil TcH1		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Unsuitable	Hilly slopes
Arable	Unsuitable	Hilly slopes
Intensive pasture	Limited	Hilly slopes
Forestry	Moderate	Restricted rooting depth

TcU1 (Te Mara undulating deep) and TcU2 (Te Mara undulating moderately deep)

Versatility evaluation for soil TcU1, TcU2		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Moderate	Inadequate aeration during wet periods; vulnerability to sustained waterlogging
Arable	Moderate	Inadequate aeration during wet periods; vulnerability to sustained waterlogging
Intensive pasture	Moderate	Inadequate aeration during wet periods; vulnerability to sustained waterlogging
Forestry	Moderate	Vulnerability to sustained waterlogging; restricted rooting depth in the moderately deep phase

TcR1 (Te Mara rolling deep) and TcR2 (Te Mara rolling moderately deep): as above, but arable landuse versatility is limited due to rolling slopes.

Management practices that may improve soil versatility

- Careful management after heavy rain and wet periods will reduce the impact of short-term waterlogging.
- Installation and maintenance of subsurface mole and tile drains will reduce the the risk of sustained waterlogging and improve aeration during wet periods.

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