

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: **Waipapa**

Overview

Waipapa soils occupy about 800 ha on terraces and downland east of the lower Mataura River valley, south of Fortrose township. They are formed in near-source wind-deposited loess derived from greywacke and schist rock. Soils are imperfectly drained, with a deep potential rooting depth and high plant available water, but are strongly leached with podzolised properties. Present use is pastoral farming with sheep, dairy and beef cattle. Climate is temperate with prevailing southerly winds and regular rainfall and soils rarely dry out.

Physical properties

Waipapa soils have a deep rooting depth and high plant available water, although the thin iron pans may also restrict roots where they are continuous. Soils are imperfectly drained, with slowly permeable subsoils that may cause short-term waterlogging after heavy rain. Textures are loamy silt in the topsoil, grading to silt loams in the subsoil, with a topsoil clay content of 15–18%. No stones or gravels occur in these soils.



Waipapa profile

Fertility properties

Topsoils organic matter levels are about 12–18%; P-retention 80–90% in the upper horizons, and pH moderate (high 5s). Less developed sites may have acidity limitations, with pH values of <5.0. Cation exchange is moderate throughout. Base saturation values are moderate in the topsoil but low in the subsoil. Topsoil available calcium values are moderate to high but magnesium and potassium levels low. Available cations in the subsoil are low to very low. Soil reserve phosphorus is low. Micronutrient levels are generally adequate.

Associated and similar soils

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

- Niagara: imperfectly drained brown soil on low terraces and floodplains
- Otatara: formed in stable sand dunes
- Tokanui: well drained soil that occurs on hilly to rolling land in more distant source loess; has yellow-brown colours and heavy silt loam texture throughout the profile
- Chaslands: imperfectly drained equivalent of the Tokanui soil

Some soils that have similar properties to Waipapa soils are:

- Scrubby Hill: equivalent soil that occurs on hilly to rolling land in more distant source loess above 100m altitude; has yellow-brown colours and heavy silt loam texture throughout the profile
- Ashers: very strongly leached podzolised soil formed in deep loess on the Southland plains
- Fortrose: imperfectly drained soil that occurs in complexes with the Waipapa soil, but does not have podzolised features
- Waimahaka: well drained equivalent of the Fortrose soil

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	slight	These soils have a slight vulnerability to structural degradation by long-term cultivation, or compaction by heavy stocking and vehicles. This rating reflects the moderate to low clay content, offset by the high organic matter and P-retention.
Nutrient leaching	slight	These soils have a slight vulnerability to leaching to groundwater. This rating reflects the imperfect drainage, high water-holding capacity and slowly permeable subsoil.
Topsoil erodibility by water	slight	Due to the moderate to low clay, but high organic matter 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	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.

YpR1 (Waipapa rolling deep)

Versatility evaluation for soil YpR1		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Moderate	Inadequate aeration during wet periods; vulnerable to sustained waterlogging.
Arable	Limited	Rolling slopes
Intensive pasture	Moderate	Inadequate aeration during wet periods; vulnerability to short-term waterlogging after heavy rainfall
Forestry	Moderate	Vulnerability to sustained waterlogging.

YpU1 (Waipapa undulating deep)

Versatility evaluation for soil YpU1		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Moderate	Inadequate aeration during wet periods; vulnerable to sustained waterlogging.
Arable	Moderate	Inadequate aeration during wet periods; vulnerability to short-term waterlogging after heavy rainfall
Intensive pasture	Moderate	Inadequate aeration during wet periods; vulnerability to short-term waterlogging after heavy rainfall
Forestry	Moderate	Vulnerability to sustained waterlogging.

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 subsurface mole and tile drains will reduce the risk of short-term waterlogging.

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