

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. No warranties are expressed or implied unless stated.

Soil name:

Waikiwi

Overview

Waikiwi soils occupy about 29,000 ha on high terraces of the southern Southland Plain between the Mataura and Aparima rivers. They are formed in deep wind-deposited loess derived from greywacke and schist rocks. Waikiwi soils are well drained, have a deep rooting depth, high water-holding capacity and silt loam textures. They are high producing soils currently used for intensive sheep, dairy and deer production, with limited cropping. They have a cool temperate climate and receive regular rain over the year and seldom dry out.



Insert soil name profile

Physical properties

Waikiwi 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 but the compact subsoil is slowly permeable, and may cause short-term waterlogging after heavy rainfall. Texture is silt loam in all horizons, with topsoil clay content of 25–30%. Waikiwi soils are typically stone free, although the moderately deep phases have gravels between 45 and 90cm depth that may restrict rooting depth and available water to moderately high.

Fertility properties

Topsoil organic matter levels are 6–8%; P-retention values 40–60% but higher in the subsoil; pH values are moderate in all horizons. Cation exchange and base saturation values are moderate, with low availability of magnesium and potassium. Reserve phosphorus levels are low and sulphate sulphur levels are high in the subsoil. Micro-nutrient levels are generally adequate, although boron responses in brassicas and molybdenum responses in legumes can occur.

Associated and similar soils

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

- Woodlands: occurs on the same landforms, but has imperfect drainage
- Dacre: poorly drained soil on floodplains of streams and minor drainage channels.
- Mokotua: occurs on the same landforms, but has imperfect drainage (tending to poor); has a structured subsoil to 90cm.
- Oteramika: shallow soil occurring on shoulder and sideslopes where loess has been eroded away

Some soils that have similar properties to Waikiwi soils are:

- Edendale: have a similar soil profile and occur on intermediate terraces in the lower Mataura and Oreti River valleys.
- Waimatuku: have a similar soil profile and occur on the high terraces of the Southland Plain west of the Waimatuku stream. They have a distinct subsoil fragipan.
- Tokanui: have a similar soil profile and occur on the rolling to hilly land east of the Mataura River, south of Mataura township.
- Waimahaka: occur in near-source loess east of the Mataura River, east of Fortrose; has pale coloured subsoils with loamy silt textures.
- Pourakino: occur on the flanks of the Pourakino Valley; paler colours; P-retention 70–85% throughout 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	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 good drainage, and the topsoil clay and P-retention values.
Nutrient leaching	moderate	These soils have a moderate vulnerability to leaching to groundwater. This rating reflects the high water-holding capacity and slow subsoil permeability, but is offset by the good profile drainage.
Topsoil erodibility by water	slight	Due to the clay content, the topsoil erodibility of these soils is slight compared to other Southland soils. 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	slight	These soils have a slight vulnerability to waterlogging during wet periods. This rating reflects the good drainage, but slowly permeable subsoil.

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.

WiU1 (Waikiwi undulating deep); WiU2 (Waikiwi undulating moderately deep)

Versatility evaluation for soil WiU1; WiU2

Landuse	Versatility rating	Main limitation
Non-arable horticulture	Moderate	Risk of short-term waterlogging after heavy rain.
Arable	Moderate	Risk of short-term waterlogging after heavy rain
Intensive pasture	Moderate	Vulnerability to leaching to groundwater
Forestry	High	Few limitations.

WiR1 (Waikiwi rolling deep); WiR2 (Waikiwi rolling moderately deep)

Versatility evaluation for soil WiR1; WiR2

Landuse	Versatility rating	Main limitation
Non-arable horticulture	Moderate	Risk of short-term waterlogging after heavy rain; rolling slopes
Arable	Limited	Rolling slopes
Intensive pasture	Moderate	Vulnerability to nutrient leaching to ground water; rolling slope
Forestry	High	Few limitations.

WiH1 (Waikiwi hilly deep)

Versatility evaluation for soil WiH1

Landuse	Versatility rating	Main limitation
Non-arable horticulture	Unsuitable	Hilly slope
Arable	Unsuitable	Hilly slope
Intensive pasture	Limited	Hilly slope
Forestry	Moderate	Hilly slope

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 should be minimised during these periods.
- Installation and maintenance of sub-surface mole and tile drains will reduce the risk of short-term waterlogging.
- If compaction occurs, aeration at the correct depth and soil moisture can be of benefit.