

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.

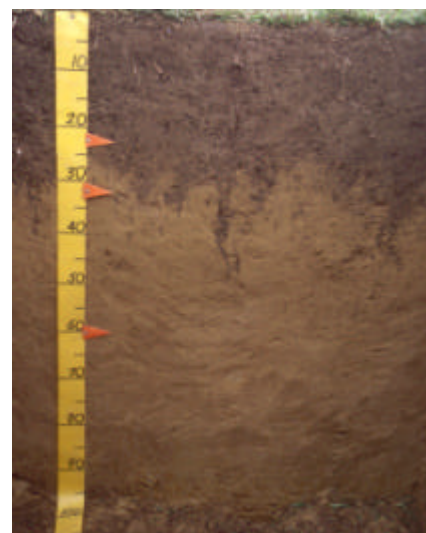
Soil name: **Woodlands**

Overview

Woodlands soils occupy 24,500 ha on intermediate and high terraces of the lower Southland Plain between the Mataura River and Otautau. They are formed in deep wind-deposited loess derived from greywacke and schist rocks. Woodlands soils are imperfectly 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.

Physical properties

Woodlands soils have a deep rooting depth and high plant-available water, meaning there is no major physical barrier to root growth, although high bulk density in the lower subsoil may restrict root penetration. The compact subsoil is slowly permeable, and may cause short-term waterlogging and limit aeration after heavy rainfall. Texture is silt loam in all horizons, with topsoil clay content of 20-30%. Woodlands soils are typically stone free, although the moderately deep phases have gravel between 45 and 90cm depth that may restrict rooting depth and available water to moderately high.



Woodlands profile

Fertility properties

Topsoil organic matter levels are 5-7%; P-retention values 30-60%; pH values are moderate, with some profiles below 5.5. Cation exchange and base saturation values are moderate and available magnesium and potassium low. Soil reserves of phosphorus are low and available sulphate sulphur high in the subsoil. Micronutrient levels are generally adequate.

Associated and similar soils

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

- Waikiwi: occurs on the same landforms, but is well drained
- Dacre: poorly drained soil on floodplains of streams and minor drainage channels.
- Oteramika: shallow soil occurring on shoulder and side slopes where loess has been eroded away
- Pukemutu: poorly drained soil, due to water perching on a dense subsoil fragipan.

Some soils that have similar properties to Woodlands soils are:

- Mokotua: occurs on the same landforms, but is more severely mottled, with the imperfect drainage tending towards poorly drained. The soils lack the structureless horizon, having a structured subsoil to 90cm.
- Arthurton: imperfectly drained Brown soil associated with Pallic soils of northern Southland, reflected in P-retentions of 20-40%
- Aparima: imperfectly drained Brown soil with a fragipan, associated with Pallic soils (Pukemutu series) on the Southland Plains, west of the Oreti River
- Fortrose: imperfectly drained soil occurring in near-source loess east of the Mataura River, west to south of Fortrose; has pale coloured subsoils with loamy silt textures.

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 moderate topsoil clay and P-retention values, but is offset by the imperfect drainage.
Nutrient leaching	slight	These soils have a slight vulnerability to leaching to groundwater. This rating reflects the imperfect drainage, high water holding capacity and slow subsoil permeability.
Topsoil erodibility by water	slight	Due to the topsoil clay percentage, the topsoil erodibility 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 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.

WdU1 (Woodlands undulating deep); WdU2 (Woodlands undulating moderately deep)

Versatility evaluation for soil WdU1, WdU2		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Moderate	Inadequate aeration during wet periods; risk of short-term waterlogging after heavy rain.
Arable	Moderate	Inadequate aeration during wet periods; risk of short-term waterlogging after heavy rain.
Intensive pasture	Moderate	Inadequate aeration during wet periods; risk of short-term waterlogging after heavy rain.
Forestry	Moderate	Vulnerability to sustained waterlogging.

WdR1 (Woodlands rolling deep); WdR2 (Woodlands rolling moderately deep)

Versatility evaluation for soil WdR1, WdR2		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Moderate	Inadequate aeration during wet periods; rolling slopes
Arable	Limited	Rolling slopes.
Intensive pasture	Moderate	Inadequate aeration during wet periods; rolling slopes.
Forestry	Moderate	Vulnerability to sustained waterlogging.

WdH1 (Woodlands hilly deep); WdH2 (Woodlands hilly moderately deep)

Versatility evaluation for soil WdH1, WdH2		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Unsuitable	Hilly slopes
Arable	Unsuitable	Hilly slopes
Intensive pasture	Limited	Hilly slopes
Forestry	Moderate	Vulnerability to sustained waterlogging; hilly slopes.

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.
- Installation and maintenance of subsurface drainage with moles and tiles may reduce the risk of short-term waterlogging
- If compaction occurs, aerating at the correct depth and moisture content can be of benefit.

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