

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: **Mandeville**

### Overview

Mandeville soils occupy about 2300 ha on undulating to steep slopes on the north side of the Hokonui Hills between Clinton and Mossburn. They also occur as bedrock outcrops within the downlands north of the Hokonui Hills. These soils are formed into thin mixed loess and colluvium, overlying tuffaceous greywacke bedrock. Mandeville soils are well drained, with a shallow rooting depth and moderate water holding capacity that is limited by the graveliness and bedrock that occurs within 45cm depth. Present use is pastoral farming with sheep and beef cattle and some deer. Climate is cool temperate with regular rain. Because of their shallow depth and mainly northerly aspect soils can be seasonally dry in some summers.



*Mandeville profile*

### Physical properties

Mandeville soils have a shallow rooting depth, restricted by the graveliness and bedrock in the subsoil, and moderate available water. These soils are well drained, with good aeration and permeability throughout the soil. Textures are typically clay loam to silty clay, but do vary according to the proportion of loess in the soil. The topsoil has a clay content of 25–40%. The soils are gravelly throughout, and typically have at least 35% gravel and bedrock within 45cm depth.

### Fertility properties

Topsoil organic matter content is 6.5–8.5%; P-retention 25–40% and pH moderate (high 5s to low 6s). Cation exchange and base saturation are high, indicating good availability of calcium, magnesium and potassium. Phosphate and sulphur reserves are low. Micronutrient levels are generally adequate, although molybdenum responses in legumes can be expected.

### Associated and similar soils

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

- Stonycreek: imperfect to poorly drained soil, formed in gravelly tuffaceous greywacke colluvium
- Hokonui: poorly drained, deep to moderately deep soil, formed in mixed loess and fine colluvium; has clayey textures
- Pukemutu: poorly drained deep soil, formed in loess; has a fragipan and clayey subsoil textures
- Waikoikoi: poorly drained deep soil, formed in loess; has a fragipan and silty textures

Some soils that have similar properties to Mandeville soils are:

- Kaihiku: formed predominantly in gravelly colluvium; bedrock may occur at 45–90cm depth
- Tyneholm: moderately leached Brown soil formed on tuffaceous greywacke bedrock within 45cm depth
- Wendon: moderately leached Brown soil formed on greywacke bedrock and colluvium; has acidic subsoils with pH of <5.5
- Taringatura: moderately leached Brown soil formed on mixed greywacke and tuffaceous greywacke bedrock and colluvium of the Taringatura Hills; has acidic subsoils with pH of <5.5

## 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
<b>Structural compaction</b>	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 good drainage and clay content, offset by the moderate low-moderate organic matter and P-retention.
<b>Nutrient leaching</b>	very severe	These soils have a very severe vulnerability to leaching to groundwater. This rating reflects the rapid permeability, low water holding capacity and shallow soil depth.
<b>Topsoil erodibility by water</b>	minimal	Due to the moderate to high clay content, topsoil erodibility in these soils is minimal. Erodibility is highly dependent on management, particularly when there is no vegetation cover.
<b>Organic matter loss</b>	moderate	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).
<b>Waterlogging</b>	nil	These soils have a nil vulnerability to waterlogging during wet periods. This rating reflects the good drainage and 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.

### MeR3 (Mandeville rolling shallow)

Versatility evaluation for soil MeR3		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Limited	Restricted rooting depth; shallow rock depth.
Arable	Limited	Rolling slopes ; restricted rooting depth
Intensive pasture	Limited	Restricted rooting depth.
Forestry	Unsuitable	Shallow rock depth

**MeU3 (Mandeville undulating shallow):** as above, with exclusion of rolling slopes limitation

### MeH3 (Mandeville hilly shallow)

Versatility evaluation for soil MeH3		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Unsuitable	Hilly slopes
Arable	Unsuitable	Hilly slopes
Intensive pasture	Limited	Hilly slopes; restricted rooting depth.
Forestry	Unsuitable	Shallow rock depth

### MeS3 (Mandeville steep shallow)

Versatility evaluation for soil MeS3		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Unsuitable	Steep slopes
Arable	Unsuitable	Steep slopes
Intensive pasture	Limited	Steep slopes; restricted rooting depth.
Forestry	Unsuitable	Shallow rock depth

### Management practices that may improve soil versatility

- Management of nutrient applications that minimise leaching losses