

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.

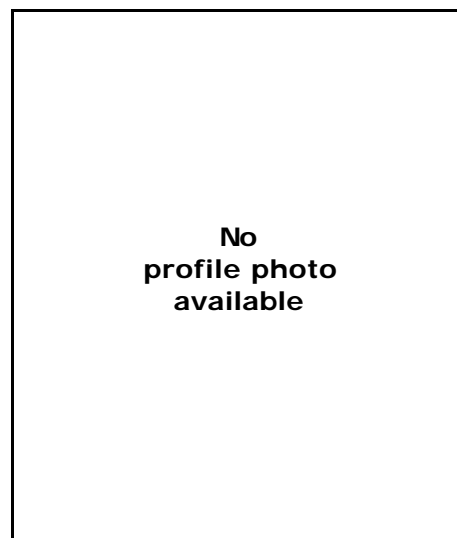
Soil name: Berwen

Overview

Berwen soils occupy about 500 ha on fan and lower hill slopes in the upper Mataura river valley, near Garston. They are formed into gravelly alluvium derived from schist rocks. They are shallow, well drained soils with loamy silt textures. At present they are used for pastoral grazing with sheep and beef cattle. Winters are cold and soils can be dry in the summer.

Physical properties

Berwen soils have slightly deep rooting depth, limited by the subsoil gravelliness. The soils are well drained, with good aeration, and moderate plant available water. Textures are loamy silt to light silt loam in the topsoil grading to sandy textures in the subsoil. Topsoil clay content is 15–20%, and typically contains gravel. Subsoils are commonly very to extremely gravelly from 30cm depth.



Berwen profile

Fertility properties

Topsoil organic matter levels are estimated as being low (no measurements recorded); P-retention values 15–20% and pH values moderate (high5s). Cation exchange values are low, with base saturation values moderate. Available calcium and potassium levels are moderate and magnesium levels low. Reserve phosphorus and sulphur levels are low. Micronutrient levels are generally adequate although molybdenum responses in legumes are likely.

Associated and similar soils

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

- Arthurton: deep, imperfectly drained soil with Brown-Pallic intergrade properties; formed in loess
- Riversdale: shallow, well drained Recent floodplain soil
- Nokomai: deep, well drained Pallic soil; formed in loess

Some soils that have similar properties to Berwen soils are:

- Lintley: shallow, well drained Brown soil; formed in greywacke fan gravels.
- Pukerangi: moderately deep, well drained Pallic soil; formed in loess overlying schist gravels
- Dome: shallow, well drained Recent soil; formed on the floodplains of fans from greywacke

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	severe	These soils have a severe vulnerability to structural degradation by long-term cultivation, or compaction by heavy stocking and vehicles. This rating reflects the low clay content and P-retention values.
Nutrient leaching	severe	These soils have a severe vulnerability to leaching to groundwater. This rating reflects the moderate to rapid permeability and moderate water holding capacity.
Topsoil erodibility by water	moderate	Due to the low clay and organic matter levels, topsoil erodibility of these soils is slight. Erodibility is highly dependent on management, particularly when there is no vegetation cover.
Organic matter loss	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).
Waterlogging	slight	These soils have a slight vulnerability to waterlogging during wet periods. This rating reflects the good drainage and moderate 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.

BwU3 (Berwen undulating shallow)

Versatility evaluation for soil BwU3		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Limited	Restricted rooting depth
Arable	Moderate	Vulnerability to topsoil structural degradation by cultivation and compaction; restricted rooting depth.
Intensive pasture	Moderate	Vulnerability to topsoil structural degradation by cultivation and compaction; vulnerability to leaching to groundwater
Forestry	Limited	Restricted rooting depth

BwR3 (Berwen rolling shallow)

Versatility evaluation for soil BwR3		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Limited	Restricted rooting depth
Arable	Limited	Rolling slope
Intensive pasture	Moderate	Vulnerability to topsoil structural degradation by cultivation and compaction; vulnerability to leaching to groundwater
Forestry	Limited	Restricted rooting depth

BwH3 (Berwen hilly shallow): These soils are unsuitable for non-arable horticulture and arable landuse and of limited suitability for pasture due to hilly slopes. Forestry landuse has limited versatility due to restricted rooting depth.

Management practices that may improve soil versatility

- Long-term cultivation should be carefully managed to minimise structural degradation
- Organic matter levels should be carefully maintained and enhanced
- Management of nutrient applications so as to minimise leaching losses