

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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Topoclimate Southland Soil Information Sheet

No. **117**

Soil name: **Hedgehope**

Overview

Hedgehope soils occupy about 600 ha on floodplain levees and low terraces of Hedgehope, Otapiri, Makarewa and other streams draining the Hokonui Hills. They are formed in deep to moderately deep fine alluvium from tuffaceous greywacke. Soils are well to imperfectly drained, with deep rooting depth, moderately high plant available water, and silty to loamy textures. Present use is pastoral farming with sheep, dairy and beef cattle. Climate is cool temperate with regular rain throughout the year. Soils rarely dry out.



Hedgehope profile

Physical properties

Hedgehope soils have a deep rooting depth, moderately high plant available water and no major restriction to root growth. The soils are well to moderately well aerated, but have slow permeability in the lower subsoil. Horizon texture is typically heavy silt loam, but may contain contrasting layers of silty clay to sandy loam texture. Topsoil clay content is 20–35%. The deep phases are stoneless, with the moderately deep phase having gravel below 45cm depth.

Fertility properties

Topsoil organic matter values are about 5–8%; P-retention values 40% and topsoil pH levels moderate (high 5s). Subsoil pH levels can be low (low 5s). Cation exchange and base saturation levels are moderate. Available calcium and magnesium levels are moderate with potassium levels low. Soil reserve phosphorus levels are low. Micronutrient levels are generally adequate.

Associated and similar soils

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

- Makarewa: poorly drained soil on the floodplain; has clayey textures
- Pukemutu: is poorly drained due to water perching on a subsoil fragipan
- Tisbury: poorly drained soil on terraces

Some soils that have similar properties to Hedgehope soils are:

- Nithdale: very similar soil that occurs on floodplains and low terraces adjacent to minor streams in the Kaiwera to Waikawa districts; typically has acidic subsoils
- Niagara: imperfectly drained equivalent of the Nithdale soil
- Ardlussa: occurs on floodplains and low terraces of streams and rivers in northern Southland and west Otago; not as strongly weathered as the Hedgehope, with Pallic to Brown intergrade properties

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 moderately well to well drained character of the soil and the moderate organic matter content and P-retention. |
| Nutrient leaching | moderate | These soils have a moderate vulnerability to leaching to groundwater. This rating reflects the moderately well drained character of this soil, offset by the high water-holding capacity. |
| Topsoil erodibility by water | slight | Due to the moderate clay and 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 good drainage, but slow permeability of the subsoil. The imperfectly drained variant has a severe waterlogging vulnerability because of its poorer drainage status. |

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.

HgU1 (Hedgehope undulating deep) and HgU2 (Hedgehope undulating moderately deep)

| Versatility evaluation for soil HgU1, HgU2 | | |
|--|--------------------|--|
| Landuse | Versatility rating | Main limitation |
| Non-arable horticulture | Moderate | Risk of short-term waterlogging after heavy rain; potential flood risk. |
| Arable | Moderate | Risk of short-term waterlogging after heavy rain. |
| Intensive pasture | Moderate | Vulnerability to leaching to groundwater; vulnerability to sustained waterlogging. |
| Forestry | Limited | Potential flood risk. |

HgU1vi (Hedgehope undulating deep, imperfectly drained variant)

| Versatility evaluation for soil HgU1vi | | |
|--|--------------------|---|
| Landuse | Versatility rating | Main limitation |
| Non-arable horticulture | Moderate | Inadequate aeration during wet periods; potential flood risk |
| Arable | Moderate | Inadequate aeration during wet periods; risk of short-term waterlogging after heavy rain. |
| Intensive pasture | Moderate | Vulnerability to leaching to groundwater; vulnerability to sustained waterlogging. |
| Forestry | Limited | Potential flood risk. |

Management practices that may improve soil versatility

- Careful management after heavy rain or 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.
- Careful management of nutrients to minimise leaching.