Soil name: Otakau

Overview

Otakau soils occupy 960 ha on the coastal flood basin of the Oreti river south of Wallacetown. They are formed in fine alluvium derived from greywacke rock. Soils are poorly drained, with silty overlying sandy textured subsoil below about 50cm. Present use is pastoral farming with sheep and beef cattle. Climate is cool temperate with regular rain during the year.

Otakau profile

Physical properties

Otakau soils have a deep rooting depth and high plant available water. These may be limited by the poor aeration for periods of the year. Permeability is moderate to slow in the upper silty textured horizons, changing to rapid in the sandy lower subsoil. Topsoil clay content is about 15%. The soils are stone free.

Fertility properties

Topsoil organic matter levels are variable (up to 28%) and influenced by the degree to which topsoils are accumulating, and occurrence of slightly peaty inclusions. P-retention values are about 30–50%, but are very low in the sandy subsoil (<10%). Soil pH levels are low in all horizons (<5.5). Cation exchange and base saturation are moderate in the topsoil but very low in the subsoil. Available calcium and magnesium levels are moderate in the topsoil and potassium levels are low. All nutrient levels are low in the sandy subsoil. Micronutrient levels are generally adequate. The soils appear to be non-saline.

Associated and similar soils

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

- Grasmere: poorly drained accumulating soil of the coastal Oreti River flood basin; has clayey over silty textures and acidic subsoils
- Makarewa: poorly drained slowly accumulating soil of river and stream floodplains throughout Southland; typically has clayey textures
- Titipua: poorly drained floodplain soil with over-thickened slightly peaty topsoils
- Invercargill: very poorly drained soil formed in peat

Some soils that have similar properties to Otakau soils are:

- Otaitai: poorly drained soil forming in interdune hollows and flats of the coastal sand dunes; has sandy textures throughout
- Dacre: poorly drained accumulating soil of river and minor stream floodplains throughout southern Southland; typically has silty 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 high organic matter content and moderate P-retention but is off-set by poor drainage.
Nutrient leaching	slight	These soils have a slight vulnerability to leaching to groundwater. This rating reflects the poor drainage and high water holding capacity.
Topsoil erodibility by water	slight	Due to the high 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	severe	These soils have a severe vulnerability to waterlogging during wet periods. This rating reflects the poor drainage.

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.

OcU1 (Otakau undulating deep)

Versatility evaluation for soil OcU1		
Landuse	**Versatility rating**	**Main limitation**
Non-arable horticulture	Limited	Inadequate aeration during wet periods; potential flood risk.
Arable	Limited	Inadequate aeration during wet periods; potential flood risk.
Intensive pasture	Moderate	Inadequate aeration during wet periods; potential flood risk.
Forestry	Limited	Inadequate aeration during wet periods; potential flood risk.

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 of drainage ditches may lower the water table, reducing the risk of aeration limitations and short-term waterlogging.