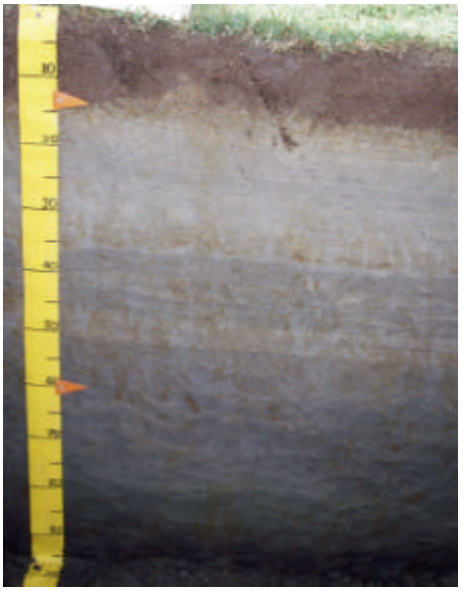
Soil name: Otaitai

Overview

Otaitai soils occupy about 2000 ha on coastal land at Colac Bay and between Riverton and Invercargill. They are formed in windblown sand, occur in the interdune hollows and sandy flats of the sand dunes. Otaitai soils have deep rooting depth, moderate available water capacity, and sandy textures. Present use is pastoral grazing with sheep and beef cattle. Climate is cool with regular rain.



Otaitai profile

Physical properties

Otaitai soils have a deep rooting depth and moderate plant available water. These may be limited by the poor aeration for periods of the year. Permeability is estimated as rapid due to the sandy texture throughout the profile. Topsoil clay content is about 3%, and the soils are typically stonefree.

Fertility properties

Topsoil organic matter levels are about 6%; P-retention values 5-20% and pH moderate (mid 5s) but very high in the subsoil (>pH7.5). Cation exchange values are low and base saturation high because of the salty marine influence. Available calcium and potassium levels are low and magnesium and sodium levels moderate. Reserve phosphorus levels are low. Micronutrient levels are generally adequate. This soil has low nutrient retention capability because of minimal structure and clay content. The soils appear to be non-saline.

Associated and similar soils

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

- Riverton: well drained soil formed on accumulating sand dunes; little subsoil development
- Otatara: well drained soil formed on stable sand dunes; subsoil shows significant B horizon development.
- Grasmere: poorly drained accumulating soil of the Oreti river flood basin; has clayey textures

Some soils that have similar properties to Otaitai soils are:

- Otakau: poorly drained accumulating soil of the Oreti river coastal flood basin; has silty upper horizons overlying sandy subsoils
- Dacre: poorly drained accumulating soil of river and minor stream floodplains throughout southern Southland; typically has silty textures
- Jacobs: poorly drained saline soil of the estuarine zone

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	very severe	These soils have a very severe vulnerability to structural degradation by long-term cultivation, or compaction by heavy stocking and vehicles. This rating reflects the poor drainage, low clay and P-retention levels.
Nutrient leaching	moderate	These soils have a moderate vulnerability to leaching to groundwater. This rating reflects the poor drainage, offset by the modearte water holding capacity and rapid permeability.
Topsoil erodibility by water	severe	Due to the very low clay content, topsoil erodibility in these soils is severe. Erodibility is highly dependent on management, particularly when there is no vegetation cover.
Organic matter loss	severe	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.

OiU1 (Otaitai undulating deep)

Versatility evaluation for soil OiU1		
Landuse	**Versatility rating**	**Main limitation**
Non-arable horticulture	Limited	Inadequate aeration during wet periods; vulnerable to structural degradation by compaction and cultivation
Arable	Limited	Inadequate aeration during wet periods; vulnerable to structural degradation by compaction and cultivation
Intensive pasture	Limited	Vulnerable to structural degradation by compaction and cultivation
Forestry	Limited	Inadequate aeration during wet periods; vulnerable to structural degradation by compaction and cultivation

Management practices that may improve soil versatility

- Organic matter levels should be carefully maintained and enhanced
- Long-term intensive cultivation should be carefully managed to minimise structural degradation
- Management of nutrient applications that minimise leaching losses
- Careful management when paddocks are cultivated to minimise water and wind erosion. If a fine tilth is created these situations are aggravated.