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. Advise 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.

Topoclimate Southland Soil Information Sheet

No. 83

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.

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.



Otaitai profile

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

SIS83.doc Last updated 27/03/03

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.

Copyright © 2002, Crops for Southland

www.cropssouthland.co.nz

This Information Sheet may be reproduced in whole or in part and in any form for educational or non-profit purposes without special permission from the copyright holder, provided acknowledgement of the source is made. Crops for Southland and Environment Southland would appreciate receiving a copy of any publication that uses this Information Sheet as a source. No use of this Information Sheet may be made for resale or for any other commercial purpose whatsoever without prior permission in writing from Crops for Southland.