Soil name: Orepuki

Overview

Orepuki soils occupy about 2200 ha on low rocky peninsulas and isolated rocky outcrops on the south coast between Orepuki and Bluff. They are formed into moderately deep to shallow loess overlying norite and tuffaceous greywacke bedrock. Orepuki soils are well drained, with a shallow rooting depth and moderate water-holding capacity that is limited by the gravelliness and bedrock that commonly occurs within 45cm depth. Present use is pastoral grazing with sheep, deer and beef cattle. Climate is cool temperate with prevailing southerly winds. Regular rain occurs throughout the year.

Orepuki profile

Physical properties

Orepuki soils have moderate plant available water and shallow to slightly deep (25–60cm) rooting depth that is limited by the graveliness and bedrock in the subsoil. Soils are well aerated, with moderate permeability. Texture is variable, ranging from silt loam to sandy loam with occasional peaty loams. Topsoil clay content is about 20%.

Fertility properties

Topsoil organic matter content is about 16%, and topsoil pH moderate (mid 5s), becoming low in the subsoil. P-retention was not measured. Cation exchange is very high due to the high organic matter, but base saturation is low. Available calcium, magnesium and potassium levels are all high to moderate. Soil reserve phosphorus levels are low. Micronutrient levels are generally adequate.

Associated and similar soils

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

- Omaui: poorly drained, sandy textured soils forming into a complex of sand, loess, marine sediments, and bouldery colluvium
- Waihoaka: moderately well drained podzolised soil formed in deep loess
- Te Waewae: well to imperfectly drained soil formed in deep loess

Some soils that have similar properties to Orepuki soils are:

- Traill: strongly leached, podzolised soil with norite and tuffaceous greywacke bedrock between 45 and 90cm depth
- Craigdale: moderately leached Brown soil with tuffaceous greywacke bedrock between 45 and 90cm depth
- Taringatura: moderately leached Brown soil with greywacke and tuffaceous greywacke bedrock and colluvium within 45cm depth; occurs on the Taringatura Mountains

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 high organic matter content and the well drained nature of the soil.
Nutrient leaching	severe	These soils have a severe vulnerability to leaching to groundwater. This rating reflects the good drainage and permeability, and moderate water holding capacity. The shallow phases are likely to have a very severe vulnerability .
Topsoil erodibility by water	minimal	Due to the high organic matter content, topsoil erodibility in these soils is minimal. 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 well drained nature of the soil 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.

OxR2 (Orepuki rolling moderately deep)

Versatility evaluation for soil OxR2		
Landuse	**Versatility rating**	**Main limitation**
Non-arable horticulture	Limited	Restricted rooting depth
Arable	Limited	Rolling slopes
Intensive pasture	Moderate	Vulnerability to leaching to groundwater; risk of short-term waterlogging after heavy rain.
Forestry	Limited	Restricted rooting depth.

OxH2 (Orepuki hilly moderately deep) and **OxS2 (Orepuki steep moderately deep):** hilly or steep slopes make these soils unsuitable for non-arable horticulture and arable landuse and of limited versatility for intensive pasture and forestry; restricted rooting depth is the main limitation for forestry.

OxU3 (Orepuki undulating shallow)

Versatility evaluation for soil OxU3		
Landuse	**Versatility rating**	**Main limitation**
Non-arable horticulture	Limited	Restricted rooting depth; shallow rock depth
Arable	Limited	Vulnerability to leaching to groundwater; restricted rooting depth.
Intensive pasture	Limited	Vulnerability to leaching to groundwater; restricted rooting depth.
Forestry	Unsuitable	Restricted rooting depth; shallow rock depth

OxH3 (Orepuki hilly shallow) and **OXS3 (Orepuki steep shallow):** unsuitable for non-arable horticulture and arable landuses due to slope limitation; limited versatility for intensive pasture due to slope and rooting depth limitation; unsuitable for forestry due to shallow rock depth.

Management practices that may improve soil versatility

- Management of nutrient applications so as to minimise leaching losses