Soil name: Scrubby Hill

Overview

Scrubby Hill soils occupy about 800 ha in hill country east of the Mataura River from south of Wyndham to the Tokanui district. They are formed into deep loess above about 100m altitude. Soils are imperfectly drained, with a deep potential rooting depth and high plant available water, but are strongly leached, with podzolised properties. Present use is extensive pastoral grazing with sheep and beef cattle. Climate is cool temperate with exposure to southerly winds. Regular rain occurs throughout the year and soils rarely dry out.

Scrubby Hill profile

Physical properties

Scrubby Hill soils have a deep rooting depth and high plant available water, although the subsoil acidity and aluminium toxicity may be limiting (particularly on less developed sites). The thin iron pans may also restrict roots where they are continuous. Soils are imperfectly drained, with slowly permeable subsoils that may cause short-term waterlogging after heavy rain. Textures are silty clays in the topsoil, grading to silt loams in the subsoil, with a topsoil clay content of 35–40%. No stones or gravels occur in these soils.

Fertility properties

Topsoil organic matter levels are about 16%, P-retention 60–80% and topsoil pH moderate (mid 5s), grading to low (<5.0) in the subsoil. Cation exchange values are high, and base saturation values moderate in the topsoil, but low in the subsoil. Topsoil available calcium values are high, magnesium values moderate and potassium values low. Available cations in the subsoil are low to very low. Soil reserve phosphorus levels are low. Micronutrient levels are generally adequate.

Associated and similar soils

Some soils that commonly occur in association with Scrubby Hill soils are:

- Fortification: strongly leached moderately deep soil onto bedrock between 45 and 90cm depth
- Pukerau: strongly leached shallow soil onto bedrock within 45cm depth
- Haldane: moderately to strongly leached imperfectly drained soil formed in deep loess; does not have podzolised properties
- Otaraia: moderately to strongly leached well drained soil formed in deep loess; does not have podzolised properties

Some soils that have similar properties to Scrubby Hill soils are:

- Waipapa: near source loess; has loamy silt textures and occurs adjacent to the Mataura River south of Fortrose
- Ashers: very strongly leached podzolised soil formed in deep loess on the Southland plains
- Waihoaka: very strongly leached podzolised soil formed in deep loess on Bluff peninsula and slopes flanking the Logwood Range

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	minimal	These soils have a minimal vulnerability to structural degradation by long-term cultivation, or compaction by heavy stocking and vehicles. This rating reflects the high organic matter, clay content, and P-retention.
Nutrient leaching	slight	These soils have a slight vulnerability to leaching to groundwater. This rating reflects the imperfect drainage, slow permeability and high water-holding capacity.
Topsoil erodibility by water	slight	Due to the high organic matter and clay 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 imperfect drainage and slow 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.

ShR1 (Scrubby Hill rolling deep)

Versatility evaluation for soil ShR1		
Landuse	**Versatility rating**	**Main limitation**
Non-arable horticulture	Moderate	Inadequate aeration during wet periods; vulnerability to sustained waterlogging
Arable	Limited	Rolling slopes
Intensive pasture	Limited	Subsoil acidity
Forestry	Moderate	Vulnerability to sustained waterlogging.

ShU1 (Scrubby Hill undulating deep)

Versatility evaluation for soil ShU1		
Landuse	**Versatility rating**	**Main limitation**
Non-arable horticulture	Moderate	Inadequate aeration during wet periods; vulnerability to sustained waterlogging
Arable	Moderate	Inadequate aeration during wet periods; vulnerability to sustained waterlogging.
Intensive pasture	Limited	Subsoil acidity.
Forestry	Moderate	Vulnerability to sustained waterlogging.

ShH1 (Scrubby Hill hilly deep): hilly slopes are a limitation for all landuses; unsuitable for non-arable horticulture and arable landuse; limited versatility for intensive pasture due also to subsoil acidity; moderate versatility for forestry due also to vulnerability to sustained waterlogging.

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 use should be minimised during these periods.