Soil name: Kuriwao

Overview

Kuriwao soils occupy about 4,100 ha on hilly slopes in eastern Southland between Mataura and Clinton. They are formed in mixed loess and stony colluvium from tuffaceous greywacke. Kuriwao soils vary in depth from shallow to moderately deep, depending on the abundance of gravels in the subsoil. They are well drained, with a slight to moderately deep rooting depth and moderately high water-holding capacity. Kuriwao soils are moderately leached, with P-retention of 50–80% and pH of <5.5 typical in the subsoil. Climate is cool temperate with regular rain and soils seldom dry out.

No profile photo available

Kuriwao profile

Physical properties

Kuriwao soils have a moderately deep rooting depth, and moderately high plant available water. The soils have good aeration and permeability throughout the profile. Textures are clay loams in all horizons, with topsoil clay content of 30–40%. Soils have varying gravel contents, depending on the pattern of colluvial deposition. The gravelliness of the shallow phases means they are likely to have slightly deep rooting depth and moderate available water.

Fertility properties

Topsoil organic matter levels are 10–11%; P-retention values 50–80% and pH moderate (mid–low 5s). Cation exchange and base saturation values are moderate to high in the topsoil but decrease in the subsoil. Available calcium and potassium values are moderate in the topsoil with magnesium levels low. Reserve phosphorus values are also low. Micro nutrient levels are generally adequate although molydbenum responses in legumes can be expected. Copper levels may be low for cattle.

Associated and similar soils

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

- Otaraia: moderately leached Brown soil formed in deep loess
- Kaihiku: shallow weakly leached soil formed into stony colluvium on north facing slopes
- Tyneholm: moderately leached Brown soil with tuffaceous greywacke bedrock within 45cm depth

Some soils that have similar properties to Kuriwao soils are:

- Craigdale: moderately leached Brown soil formed in moderately deep loess overlying tuffaceous greywacke bedrock
- Kaiwera: shallow, well drained strongly leached soil forming into stony colluvium or bedrock; has P-retention of >85%
- Waiarikiki: moderately deep equivalent of the Kaiwera soil; formed in gravelly colluvium, but the very gravelly horizon with >35% gravel occurs deeper, at between 45 and 90cm depth
- Josephville: Brown soil formed into moderately deep and deep loess overlying tuffaceous greywacke bedrock and stony colluvium; the soils are only weakly leached with P-retention of 20–40%.

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 good drainage, moderate clay, P-retention and organic matter levels
Nutrient leaching	moderate	These soils have a moderate vulnerability to leaching to groundwater. This rating reflects the good drainage and moderate permeability, offset by the moderately high water-holding capacity. The shallow phases are likely to have severe vulnerability.
Topsoil erodibility by water	minimal	Due to the high clay content, topsoil erodibility in these soils is minimal. 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	nil	These soils have a nil vulnerability to waterlogging during wet periods. This rating reflects the good drainage, moderate permeability, and the hilly to steep slopes.

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.

KuH2 (Kuriwao hilly moderately deep)

Versatility evaluation for soil KuH2		
Landuse	**Versatility rating**	**Main limitation**
Non-arable horticulture	Unsuitable	Hilly slopes
Arable	Unsuitable	Hilly slopes
Intensive pasture	Limited	Hilly slopes
Forestry	Moderate	Hilly slopes; restricted rooting depth

KuH3 (Kuriwao hilly shallow)
KuS3 (Kuriwao steep shallow)

Versatility evaluation for soil KuH3, KuS3		
Landuse	**Versatility rating**	**Main limitation**
Non-arable horticulture	Unsuitable	Hilly and steep slopes
Arable	Unsuitable	Hilly and steep slopes
Intensive pasture	Limited	Hilly and steep slopes
Forestry	Limited	Steep slopes; restricted rooting depth

Management practices that may improve soil versatility

- Management of nutrient applications so as to minimise leaching losses.