

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. Advice 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.

Soil name: **Fairfax**

Overview

Fairfax soils occupy about 2300 ha on the lower northern and eastern flanks of the Longwood Range in western Southland. These soils also occur on adjacent hilly areas to those included in the Topoclimate survey. They are formed in moderately deep to deep loess over tuffaceous greywacke and, in parts, basic volcanic rock. Fairfax soils are moderately well to well drained, with heavy silt loam to silty clay textures. Present use is pastoral grazing with sheep and some beef cattle. The climate is cool temperate with regular rainfall throughout the year.

Physical properties

Fairfax soils have moderately high plant available water and a deep rooting depth, which would be restricted by bedrock in the moderately deep soils. The soils are moderately well drained, but are slowly permeable in the firm lower subsoil. Textures are silty clay, but heavy silt loams are also common. Topsoil clay content is 30–40%. Deeper soils are stone free, but the hilly land is commonly moderately deep, with bedrock between 45–90cm depth.



Fairfax profile

Fertility properties

Topsoil organic matter levels are 5–7%; P-retention values 40–65% and pH moderate (mid5s). Cation exchange values are moderate to high and base saturation low. Available calcium and potassium are low and magnesium levels high. Reserves of phosphorus are also low. Micro nutrient levels are generally adequate.

Associated and similar soils

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

- Pourakino: well drained, deep Brown soils with silty textures and P-retention of >80%.
- Pukemutu: poorly drained soils with a fragipan.
- Woodlands : imperfectly drained, deep Brown soil

Some soils that have similar properties to Fairfax soils are:

- Woodlaw: formed from colluvium and weathered tuffaceous greywacke and basic volcanic rocks, with little loess influence
- Orawia: formed from loess and partly calcareous siltstones and sandstone

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 good drainage and high clay content. |
| Nutrient leaching | moderate | These soils have a moderate vulnerability to leaching to groundwater. This rating reflects the moderately high water holding capacity, offset by the good drainage. |
| Topsoil erodibility by water | minimal | Due to the high clay content the topsoil erodibility of 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 | slight | These soils have a slight vulnerability to waterlogging during wet periods. This rating reflects the moderate to good drainage, but slow permeability. The rolling and steep phases will have minimal vulnerability because of the slope. |

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.

FfR1 (Fairfax rolling deep)

| Versatility evaluation for soil FfR1 | | |
|--------------------------------------|--------------------|---|
| Landuse | Versatility rating | Main limitation |
| Non-arable horticulture | Moderate | Vulnerability to leaching to groundwater; risk of short-term waterlogging after heavy rain |
| Arable | Limited | Rolling slopes |
| Intensive pasture | Moderate | Vulnerability to leaching to groundwater; risk of short-term waterlogging after heavy rain. |
| Forestry | High | Few limitations |

FfU1 (Fairfax undulating deep): as above, but arable landuse versatility improves to 'moderate', with main limitations of vulnerability to leaching to groundwater and risk of short-term waterlogging after heavy rain.

FfU2 (Fairfax undulating moderately deep)

| Versatility evaluation for soil FfU2 | | |
|--------------------------------------|--------------------|---|
| Landuse | Versatility rating | Main limitation |
| Non-arable horticulture | Limited | Restricted rooting depth |
| Arable | Moderate | Vulnerability to leaching to groundwater; risk of short-term waterlogging after heavy rain |
| Intensive pasture | Moderate | Vulnerability to leaching to groundwater; risk of short-term waterlogging after heavy rain. |
| Forestry | Limited | Restricted rooting depth |

FfR2 (Fairfax rolling moderately deep): as above, but arable landuse versatility rating is 'limited' by rolling slopes and intensive pasture does not have the limitation of waterlogging.

FfS2 (Fairfax steep moderately deep): unsuitable for non-arable horticulture and arable landuses, limited versatility for intensive pasture and forestry, due to steep slopes and (for forestry) restricted rooting depth.

Management practices that may improve soil versatility

- Installation and maintenance of subsurface mole and tile drains on flatter terrain will reduce the risk of short-term waterlogging
- Management of nutrient applications so as to minimise leaching losses

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