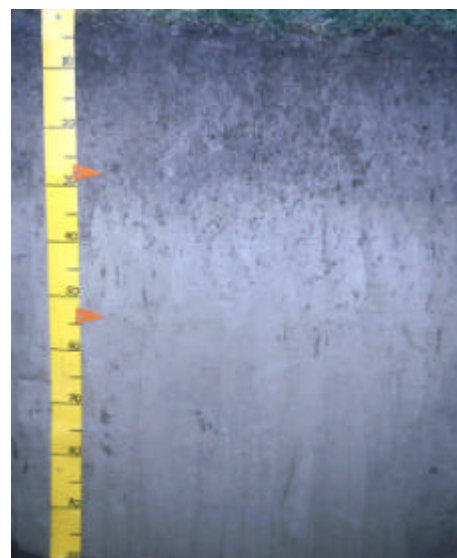


Soil name: Pomahaka

Overview

Pomahaka soils occupy about 130 ha on the accumulating flood plain of the Clutha River in the Otago district of south Otago, as well as in unsurveyed areas of the lower Clutha catchment. They are formed in moderately deep to deep fine alluvium derived mainly from schist rock. Pomahaka soils are typically free draining, with occasional depression areas that have imperfect drainage. They have deep rooting depth, and moderate to high water holding capacity, depending on the texture of the soil. Texture is variable, but dominantly loamy silt, with coarser textured sandy loams to sands common. Present use is pastoral grazing with cattle and sheep and cropping. Climate is temperate with regular rainfall.



Pomahaka profile

Physical properties

Pomahaka soils have a deep rooting depth with very high plant available water. The water capacity will vary depending on texture, decreasing down to moderate as the amount of sand and/or gravel increases. The soils are generally well drained with good permeability, but the imperfectly drained variant may have some aeration limitations. Texture is variable, but dominantly loamy silt, with coarser textured sandy loams to sands common. Topsoil clay content is about 10%. Deep soils are stone free. Moderately deep soils have gravel below 45cm.

Fertility properties

Topsoil organic matter levels are 3-4%, P-retention 9-15% and topsoil pH moderate (high 5s). Subsoil pH values are high (high 6s). Cation exchange levels are very low and base saturation high. Available calcium levels are moderate with magnesium and potassium levels low. Soil reserve phosphorus and sulphur levels are low. Micronutrient levels are generally adequate.

Associated and similar soils

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

- Pukeawa: well drained shallow soil, with less than 45cm to the underlying bedrock
- Paretai: moderately deep to deep poorly drained soil

Some soils that have similar properties to Pomahaka soils are:

- Mataura: formed on the accumulating floodplains of the Mataura and Oreti rivers
- Clutha: formed on the slowly accumulating floodplain; has developed a weathered subsoil
- Popotunoa: forming on infrequently flooding low floodplain terraces with low sediment accumulation; has greater subsoil development, with the presence of a structured, brittle Bw horizon

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 low organic matter, clay and P-retention.
Nutrient leaching	moderate	These soils have a moderate vulnerability to leaching to groundwater. This rating reflects the moderate drainage and permeability, offset by the high water-holding capacity..
Topsoil erodibility by water	moderate	Due to the low organic matter and clay content, topsoil erodibility in these soils is moderate. Erodibility is highly dependent on management, particularly when there is no vegetation cover.
Organic matter loss	slight	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 drainage and 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.

PmU1 (Pomahaka undulating deep)

PmU1vi (Pomahaka undulating deep imperfectly drained variant)

PmU2 (Pomahaka undulating moderately deep)

Versatility evaluation for soil PmU1, PmU1vi, PmU2		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Limited	Potential flood risk.
Arable	Moderate	Vulnerability to topsoil structural degradation by cultivation and compaction; Potential flood risk.
Intensive pasture	Moderate	Vulnerability to topsoil structural degradation by cultivation and compaction; risk of nutrient leaching
Forestry	Limited	Potential flood risk.

PmU1vw (Pomahaka undulating deep raw variant)

Versatility evaluation for soil PmU1vw		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Unsuitable	Potential flood risk.
Arable	Unsuitable	Potential flood risk.
Intensive pasture	Limited	Vulnerability to topsoil structural degradation by cultivation and compaction; potential flood risk.
Forestry	Unsuitable	Potential flood risk.

Management practices that may improve soil versatility

- Pomahaka soils would benefit from flood protection for intensive landuses.
- Cultivation and intensive stocking or vehicular traffic should be minimised during wet periods
- Long-term cultivation should be carefully managed to minimise structural degradation
- Organic matter levels should be carefully maintained and enhanced
- Management of nutrient applications that minimise leaching losses

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