Soil name: Upukerora

Overview

Upukerora soils occupy about 10,200 ha on active floodplains along the Waiau and Aparima rivers. They are formed into gravelly alluvium derived from the Fiordland, Takitimu, and Livingstone Mountains. Soils are variable due to the flood activity, but are typically gravelly with shallow rooting depth and moderate to low water holding capacity. They have sandy to light silt loam textures, are excessively well drained, and can be seasonally dry. Most areas of these soils are part of the flood channel of the Waiau and Aparima rivers, with fringe areas used for casual grazing with sheep and beef cattle. Climate is cool temperate with regular rainfall.

Upukerora profile

Physical properties

Upukerora soils have a shallow rooting depth, with moderate to low plant available water depending on the gravelliness of the subsoil. The soils are excessively well drained, with good aeration and rapid permeability. Textures are variable due to the gravels, with a topsoil clay content of 10–20%. Topsoils are often moderately to very gravelly, and very to extremely gravelly below.

Fertility properties

The chemical properties of topsoils are variable. Typically organic matter content is about 3–6%, P-retention <30% and pH moderate (high 5s). Cation exchange is moderate to low with base saturation high. Available calcium, magnesium and potassium are moderate. 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 Upukerora soils are:

- Tuatapere: moderately deep to deep well drained soil; slightly older soil with more profile development
- Manapouri: moderately deep to deep poorly drained soil

Some soils that have similar properties to Upukerora soils are:

- Waiau: formed on the slowly accumulating floodplain and low terraces
- Riversdale: formed in mixed greywacke and schist gravels of the Mataura and Oreti rivers
- Howe: formed on the active floodplain of the Mataura and Oreti rivers

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	severe	These soils have a severe vulnerability to structural degradation by long-term cultivation, or compaction by heavy stocking and vehicles. This rating reflects the low clay, P-retention and organic matter content.
Nutrient leaching	very severe	These soils have a very severe vulnerability to leaching to groundwater. This rating reflects the good drainage, moderate–low water-holding capacity, and rapid permeability.
Topsoil erodibility by water	severe	Due to the low clay and organic matter levels, topsoil erodibility in these soils is severe. Erodibility is highly dependent on management, particularly when there is no vegetation cover.
Organic matter loss	severe	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 extemely well drained nature of the soil.

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.

UpU3 (Upukerora undulating shallow)

Versatility evaluation for soil UpU3		
Landuse	**Versatility rating**	**Main limitation**
Non-arable horticulture	Unsuitable	Potential flood risk
Arable	Unsuitable	Potential flood risk
Intensive pasture	Limited	Potential flood risk; restricted rooting depth
Forestry	Unsuitable	Potential flood risk

Management practices that may improve soil versatility

- Management of nutrient applications that minimise leaching losses
- Long-term cultivation should be carefully managed to minimise structural degradation
- Organic matter levels should be carefully maintained and enhanced