

Soil name: **Josephville**

Overview

Josephville soils occupy about 1400 ha on hilly landforms on the northwest end of the Hokonui Hills and North Range in the Lumsden district. They are formed in dominantly wind deposited loess overlying greywacke and tuffaceous greywacke rocks. Soils are silty textured, well drained, with moderately deep to deep rooting depth, and moderate to moderately high plant available water. Present use is pastoral grazing with sheep and beef cattle. Climate is cool temperate with cold winters and warm summers. Soils may be seasonally dry in some years.

**No
profile photo
available**

Josephville profile

Physical properties

Josephville soils have a deep rooting depth and moderately high plant available water. The soils have good aeration and permeability throughout the profile. Textures are heavy silt loam in all horizons, with a topsoil clay content of 30–35%. Colluvial gravel is present in all horizons to varying levels, but is generally less than 35%, except in the moderately deep phases that are either very gravelly or have bedrock between 45 and 90cm depth. The moderately deep phases will have moderate to slightly deep rooting depth, and moderate plant available water.

Fertility properties

Topsoil organic matter content is about 8%; P-retention 50% and pH levels moderate (mid 5s). Cation exchange values are high and base saturation low. Available calcium, magnesium and potassium levels are moderate. Reserve phosphorus and sulphur levels are low. Micronutrient levels are generally adequate although molybdenum responses in legumes can be expected.

Associated and similar soils

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

- Mandeville: shallow soil on tuffaceous greywacke bedrock
- Wendon: shallow soil on greywacke bedrock
- Kaihiku: shallow soil forming into gravelly tuffaceous greywacke colluvium

Some soils that have similar properties to Josephville soils are:

- Waikaka: occurs on rolling and hilly land grading between the downlands and the hill country in eastern Southland and west Otago
- Crookston: occurs on terraces and fans from northern Southland to west Otago
- Tuturau: similar soil but has loamy silt subsoil textures; formed in near-source loess adjacent to the Maitara River, between Maitara and Waimahaka

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 moderate clay and P-retention levels.
Nutrient leaching	moderate	These soils have a moderate vulnerability to leaching to groundwater. This rating reflects the good drainage, offset by the moderately high water-holding capacity. The moderately deep phases are likely to have severe vulnerability.
Topsoil erodibility by water	slight	Due to the moderate 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	slight	These soils have a slight vulnerability to waterlogging during wet periods. This rating reflects the good drainage. The hilly to steep phases will have a nil vulnerability.

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.

JvH1 (Josephville hilly deep); JvH2 (Josephville hilly moderately deep)

Versatility evaluation for soil JvU1, JvH2

Landuse	Versatility rating	Main limitation
Non-arable horticulture	Unsuitable	Hilly slopes
Arable	Unsuitable	Hilly slopes
Intensive pasture	Limited	Hilly slopes
Forestry	Moderate	Hilly slopes; moderately deep soils also have restricted rooting depth.

JvU1 (Josephville undulating deep)

Versatility evaluation for soil JvU1

Landuse	Versatility rating	Main limitation
Non-arable horticulture	High	No significant limitation
Arable	High	No significant limitation
Intensive pasture	Moderate	Vulnerability to leaching to groundwater
Forestry	High	No significant limitation

JvU2 (Josephville undulating moderately deep): as above but versatility for non-arable horticulture is limited due to restricted rooting depth, versatility for arable is moderate due to vulnerability to leaching and restricted rooting depth, versatility for forestry is limited due to restricted rooting depth.

JvR2 (Josephville rolling moderately deep)

Versatility evaluation for soil JvR2

Landuse	Versatility rating	Main limitation
Non-arable horticulture	Moderate	Vulnerability to leaching to groundwater; restricted rooting depth.
Arable	Limited	Rolling slopes
Intensive pasture	Moderate	Vulnerability to leaching to groundwater; rolling slopes
Forestry	Moderate	Restricted rooting depth

JvR1 (Josephville rolling deep): as above, but rolling slopes become main limitation for non-arable horticulture and forestry has high versatility rating and no significant limitation.

Management practices that may improve soil versatility

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

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