

This Information Data 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 soil 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 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.

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Soil Information Data Sheet

Soil name: **Abbotsford**

Overview

Abbotsford soils occur on rolling downlands and hill country between Brighton and Palmerston. They are formed in insitu soft glauconitic mudstone [Abbotsford formation] or mixed colluvium from mudstone and minor loess. Abbotsford soils are characterised by areas of slump earthflow topography with rippled or hummocky surfaces. They also include stable areas of Warepa soils where deep windblown loess has accumulated. Abbotsford soils are imperfectly drained, with moderately deep rooting depth and moderate waterholding capacity. The versatility of Abbotsford soils is limited by their vulnerability to mass movement erosion.

No photo
available

Key profile features

Abbotsford soils have a 15-25 cm deep topsoil that has moderately developed structure and good root distribution. Subsoil structure is moderate in the upper subsoil, becoming more weakly developed below 50 cm depth with few roots. The slow permeability in the subsoil is reflected in the mottling of the upper subsoil. The subsoils are also characterised by the accumulation of clay as coatings of the structure faces, and in the more clayey textures.

Key physical properties

Abbotsford soils have a moderately deep potential rooting depth and moderate to moderately high water holding capacity that is limited by the mudstone at 45–90 cm depth. The soils are imperfectly drained and may have limited aeration during wet periods. The slowly permeable subsoil may also cause short-term waterlogging and topsoil puddling after heavy rainfall. The soils typically have silt loam to silty clay texture, with a topsoil clay content of between 25-45%, depending on the relative influence of loess (silty) and mudstone (clayey) in the soil formation. The soils may contain a slightly to moderately gravelly component of mudstone fragments scattered through the profile.

Key chemical properties

Note: Variation can be expected in the topsoil (A horizon) depending on paddock fertiliser practices.

Abbotsford soils have low to moderate (4-8%) topsoil organic matter; P-retention is also low (10-30%); and pH moderate to low (5.0 to 5.6). Cation exchange capacity is moderate throughout the profile, and base saturation values are moderate in the topsoil but low in the subsoil. Exchangeable cations (calcium, potassium and sodium) are also moderate to low in the topsoil but low in the subsoil, with exchangeable magnesium high throughout. Reserve phosphorus and sulphate sulphur are low.

Associated and similar soils

Some soils that commonly occur with Abbotsford soils are:

- Wangaloa: formed in insitu soft sandstone or mixed colluvium from sandstone and minor loess
- Taratu: formed in insitu quartz sands and gravels or mixed colluvium from quartz gravels and minor loess
- Warepa: formed in deep windblown loess, with imperfect to poor drainage due to water perching on a dense subsoil fragipan at 40-70 cm. Warepa soils have silty textures and often occur in complexes with Abbotsford soils on stable parts of the landscape

Associated and similar soils (continued)

- Tokomairiro: formed in deep loess on low-angle fans and terraces, with poor drainage due to water perching on a dense subsoil fragipan at 70-90 cm.
- Cargill: well drained soil formed in weathered basalt at 45-90 cm depth, and in some areas mixed with a minor component of loess

Vulnerability to environmental degradation

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 the Otago Regional Council or a farm management consultant.

Vulnerability factor	Rating	Vulnerability compared to other Otago 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 imperfect drainage, low P-retention levels, with moderate to low organic matter levels, and moderate topsoil clay content. The phases with silty clay topsoils are likely to have moderate vulnerability.
Nutrient leaching	moderate	These soils have a moderate vulnerability to leaching to surface and groundwater. This rating reflects the imperfect drainage, moderately high total water holding capacity, and the slowly permeable subsoil.
Waterlogging	moderate	These soils have a moderate vulnerability to waterlogging during wet periods. This rating reflects the imperfect drainage and slowly permeable subsoil. The hilly phases are likely to have slight vulnerability.

General landuse versatility ratings

Note: The versatility ratings in the table below are indicative of the major limitations for semi-intensive to intensive landuse. These ratings differ from those used in the past in that sustainability factors are incorporated in the classification.

Refer to the 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.

Versatility evaluation for soil Ab1cU, Ab1zU, Ab1z/dU, Ab1zR, Ab1dR, Ab1z/dR, Ab1c/dR		
Landuse	Versatility rating	Main limitation
High class soils	No	Erosion vulnerability
Non-arable horticulture	Limited	Restricted aeration during wet periods; also short-term waterlogging risk after heavy rainfall, due to shallow depth to slowly permeable subsoil.
Arable	Limited	As above; plus rolling slopes for the rolling phases
Potential versatility after drainage	Limited	As above

Versatility evaluation for soil Ab1zH, Ab1z/dH, Ab1c/dH, Ab1zS		
Landuse	Versatility rating	Main limitation
High class soils	No	Erosion vulnerability; hilly and steep slopes
Non-arable horticulture	Unsuitable	As above
Arable	Unsuitable	As above
Potential versatility after drainage	Unsuitable	As above

Management practices that may improve soil versatility

- Abbotsford soils (particularly the hill phases) are vulnerable to mass movement erosion such as soil slipping, rotation slumping, and earthflow.
- The soils do require careful management to avoid worsening of the waterlogging risk. Cultivation and intensive stocking or vehicle traffic should be minimised during wet periods.
- Maintenance and enhancement of soil organic matter