

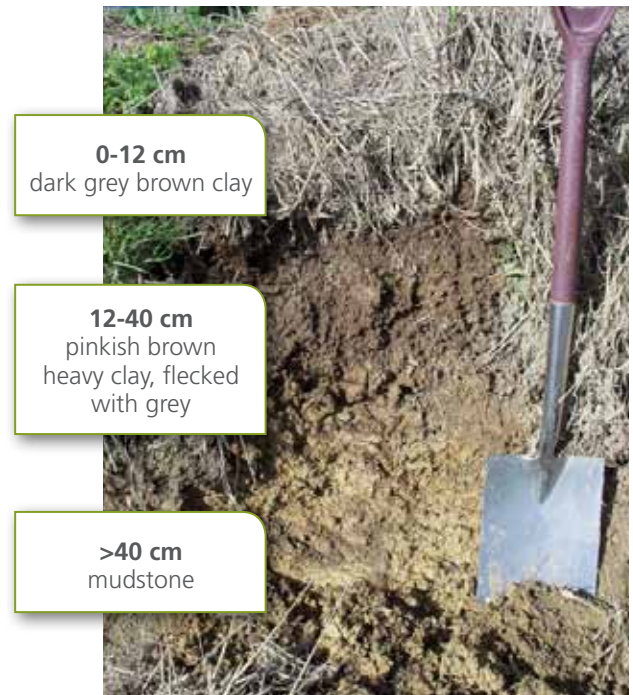
Calcareous mudstone soils

Soil types in this group

- Rockvale clay - RV
- Rockvale clay with coarse-structured subsoil – Rve
- Whaka clay loam – WB, WBH*

*The H denotes the hill variant of this soil type, which occurs on slopes over 20° and has a shallower profile.

This fact sheet uses NZ Soil Bureau map series soil type names and abbreviations.



Rockvale clay (RV) soil profile

Features of calcareous mudstone soils

- These soils formed from deep layers of mixed sedimentary basement rocks
- They are part of the Whaka soil suite
- Some of the most unstable land in Northland belongs in this soil group
- Whaka clay loam can be unstable even on gentle slopes
- Rockvale soils are usually found in mosaics with limestone soils
- Younger Whaka soils are less leached; older Rockvale soils are weakly podzolised
- Topsoils are a dark colour
- Weathering has created expanding montmorillonite clays which are especially soft and wet in winter and dry out and crack in summer

Structure and drainage management

Issues	Management tips
Whaka clay loams are soft in winter, pugging easily, but dry out and crack badly in summer	Careful winter grazing management can minimise pugging and compaction and protect soil structure
Rockvale clays are deep soils with a coarse-structured subsoil that makes topsoils unstable	
They have formed from a complicated mix of soils crushed together into mosaics, which makes management challenging	Good pasture covers help maintain soil moisture in summer and build soil organic matter to improve soil structure
Expanding clays seal soil surfaces in the wet	

Erosion control

Erosion risks	Soil type	Specific problems	Possible solutions
Deep-seated slumps and earthflows	All calcareous mudstones, especially Whaka clay loam	Instability on gentle slopes becomes pronounced as gradient increases Movement can be large scale, threatening infrastructure	Relatively fertile Whaka soils support rapid growth of erosion control tree species such as willows and poplars Open planted poplars will help to hold hillsides in place
Gully erosion leading to earthflow	All calcareous mudstones, especially drainage depressions subject to sporadic, occasional water flow	Gully erosion removes support from unstable, adjoining slopes, creating earthflows even on gentle slopes Road and track cuttings can also remove natural support structure Once support is gone, earthflow erosion is free and unrestricted	Plant willow poles in a zig-zag pattern along erosion-prone drainage depressions to reduce gully erosion risk If undercutting can be avoided when constructing roads and tracks, risks of earthflow can be mitigated



Typical Rockvale (RV) landscape near Arapohue

Nutrient management

Soil type	Nutrient status	Management strategies
All these soils	Soil susceptibility to pugging leads to nutrient loss via runoff	Avoid pugging and manage pasture covers well
Whaka clay loam	Naturally fertile	Both capital and maintenance fertiliser is still required, but lime dressings can be lighter than for Rockvale soils
Rockvale soils	Leaching has reduced fertility	Lime may be needed to raise pH. Little and often applications of fertiliser are recommended; seek advice from your fertiliser consultant

Drainage classes

Soil symbol	Full name	Drainage class
WHAKA SUITE Basement rock: calcareous mudstone		
WB, WBH	Whaka clay loam	2 - Imperfectly drained
RV	Rockvale clay	1 - Poorly drained
RVe	Rockvale clay with coarse-structured subsoil	1 - Poorly drained

Northland soil factsheet series

- Northland's climate, topography, historic vegetation and mixed geology have combined to form a complex pattern of soils across the region. There are over 320 soil types in Northland. Other regions in New Zealand average only 20 soil types per region.
- The information in this fact sheet is based on a 1:50,000 mapping scale. Therefore, it is not specific to individual farms or properties. However, it may help you to understand general features and management options for recent alluvial soils.
- Knowing your soils' capabilities and limitations is the key to sustainable production in Northland. Northland Regional Council (NRC) land management advisors are available to work with landowners to provide free soil conservation advice, plans and maps specific to your property.
- Regular soil tests are recommended. If you are concerned about your soil structure or health, the Visual Soil Assessment test could be useful. Contact the land management advisors at Northland Regional Council for more information.
- Further background information about the processes that have formed these soils can be found here: www.nrc.govt.nz/soilfactsheets

Contact a land management advisor on
0800 002 004 or visit www.nrc.govt.nz/land