

Old sandstone soils

Soil types in this group

- Hukerenui fine sandy loam - HKf, HKfH*
- Hukerenui sandy loam - HKa, HKaH*
- Hurewai fine sandy loam - HW, HWH*
- Mahurangi fine sandy loam - MV, MVH*
- Otangaroa clay, sandy clay loam - OC, OCH*
- Oturu fine sandy loam - OU
- Puketitoti sandy loam - PD, PDH*
- Pukewaenga sandy loam - PW, PWH*

*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.



Hukerenui sandy loam (HKa, HKaH) soil profile

Features of old sandstone soils

- Old sandstone soils are strongly leached and naturally acidic because of the conditions produced under kauri forest leaf litter
- They are part of the Omanaia, Puhoi, Purua and Waitotira suites
- Most soils are pale due to leaching of iron and loss of clay
- Low clay content in topsoils has resulted in the formation of sandy loams
- These soils often appear in a mosaic with younger soils on steeper sites and podzols ('gumland') on flat or very easy sites
- Where podzols have formed, soil horizons are distinct
- Some of these soils have high sulphide subsoils that can be difficult to revegetate if exposed

Structure and drainage management

Issues	Management tips
Winter wetness and associated pugging and compaction are problems with all these soils	Careful winter grazing management can minimise pugging and compaction and protect soil structure
Ground seepage is common in some areas for long periods; from autumn to late spring	Paddock smoothing may be required at intervals; but cropping and regrassing rotations should be no-till where possible to avoid damage to soil structure
While sandy loams are easy to cultivate because of very low clay content, cropping can turn soil into a structureless dust in summer and a mud slurry in winter	

Erosion control

Erosion risks	Soil type	Specific problems	Possible solutions
Gully erosion	All old sandstone soils	<p>Strongly developed columnar subsoils are prone to gully erosion</p> <p>Heavy stock pressure damages weak soil structure, turning wet soils into a quagmire</p> <p>Erosion and sediment discharge from roads and tracks distributes fine sediments into waterways</p>	<p>If sulphide levels are high and pH low, consider use of netting or debris dams to retain soil until growing conditions are suitable</p> <p>Armour gully sides and heads with soil conservation trees</p> <p>In these soils there is a risk that tree establishment will be poor; seek professional advice</p>
Sheet erosion	All old sandstone soils	<p>Sheet erosion washes topsoil and nutrients into waterways</p> <p>Cropping and pasture development can turn soils into structureless dust</p> <p>Groundwater seepage can increase potential for sheet erosion</p>	<p>Reduce stock pressure to prevent pugging and overgrazing, which can lead to sheet erosion</p> <p>Use no-till methods when regrassing</p> <p>Consider retiring very steep or marginal pastoral land from grazing if pastoral returns are marginal and/or weed invasion is a problem</p> <p>When constructing roads and tracks: crowning road surfaces and using frequent culverts will reduce scouring; armour channels and culvert outfalls carefully to avoid scouring</p> <p>Restore and create wetlands in less productive low lying areas to trap sediment</p>



Old sandstone Puketitōi sandy loam soils (PD, PDH), Kokopu

Nutrient management

Soil type	Nutrient status	Management strategies
All old sandstone soils	These soils are heavily leached and generally acidic. They are low in natural fertility and trace elements	<p>Lime may be needed to raise pH, however nutrient availability should be high due to low clay content. A 'little but often' maintenance fertiliser programme will reduce leaching losses</p> <p>Seek advice from your fertiliser consultant and vet for nutrient requirements</p>
Hill variants	Lower in sulphur than other mature sandstone soils	Test soils regularly

Drainage classes

Soil symbol	Full name	Drainage class
PUHOI SUITE Basement rock: banded sandstone		
MV, MVH	Mahurangi fine sandy loam	3⇒2⇒1 - Moderately to poorly drained
OU	Oturu fine sandy loam	3⇒2⇒1 - Moderately to poorly drained
HKf, HKfH	Hukerenui fine sandy loam	2⇒1 - Imperfectly to poorly drained
OMANAIA SUITE Basement rock: sandstone–mudstone complex		
HW, HWH	Hurewai fine sandy loam	3⇒2⇒1 - Moderately to poorly drained
WAIOTIRA SUITE Basement rock: massive sandstone		
PD, PDH	Puketitoti sandy loam	3⇒2⇒1 - Moderately to poorly drained
PW, PWH	Pukewaenga sandy loam	3⇒2⇒1 - Moderately to poorly drained
HKa, HKaH	Hukerenui sandy loam	2⇒1 - Imperfectly to poorly drained
PURUA SUITE Basement rock: shattered sandstone		
OC, OCH	Otangaroa clay, sandy clay loam	2 - Imperfectly 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