Young semi-volcanic soils

Soil types in this group

- Awapuku clay loam – AK, AKH*
- Bream clay loam – BM, BMH*
- Haunga complex – C5, C5H*
- Huia stony clay and stony silt loam steepland soil - HAS
- Huia stony silt loam steepland soils – HAIS
- Hunoke stony clay loam – HU, HUH*
- Katui clay loam – KT, KTH*
- Takitu gravelly clay loam – TU, TUH*
- Te Kie light brown stony clay loam steepland soils – TeuS
- Te Kie red clay loam steepland soil – TerS
- Te Kie stony clay loam steepland soils – TES
- Tokawhero stony clay – TWH*

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

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

Takitu gravelly clay loam (TU, TUH) soil profile

Features of young semi-volcanic soils

- These young semi-volcanic brown granular loams and clays are a complex group of soils formed on rock and ash from the now-extinct Tangihua volcanoes
- They are part of the Huia, Katui and Te Kie soil suites
- Tangihua volcanics are mixed with sedimentary rocks
- Young semi-volcanic soils on easier contour can be fertile, highly productive pastoral or forestry land
- However, while naturally fertile, the steepland soils are particularly prone to shallow or deep seated slipping. Therefore, much of this land is not suited to pastoral farming
- Because most young semi-volcanic soils are found in the upper catchments of Northland's major rivers and they easily discolour water, it is important that they are carefully managed

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Structure and drainage management

Issues	Management tips
While topsoils are friable, granular and prone to drying out, subsoils can be sticky clay	Consider subsurface drainage in poorly drained areas of pasture with sticky clay subsoil
Soil structures can be compromised on steeper slopes; Te Kie steepland variants are particularly skeletal Bream clay loam topsoils are dry, shallow and hard to revegetate	Avoid overgrazing of pasture and maintain a dense pasture cover to help build soil organic matter, improve soil structure and retain moisture in the soil
Haunga (C5, C5H) soils are limited in their use for farming or forestry because of numerous rocks and seepage areas from plateaus above	Consider retiring very steep or marginal pastoral land from grazing if pastoral returns are poor and/or weed invasion is a problem

Erosion control

Erosion risks	Soil type	Specific problems	Possible solutions
Sheet erosion	All young semi-volcanic soils	Extreme slopes with limited vegetation cover are vulnerable to sheet erosion	Maintain dense pasture cover to prevent sheet erosion
Slipping (severe)	All young semi-volcanic soils, especially on steepland soils	Deep Takitu hill soils are subject to deeper slips than those that occur on shallow Te Kie soils Te Kie and Awapuku slip scars are slow to revegetate Haunga complex (C5, C5H) and Hunoke soils suffer deep-seated flow movement on easier contour and large scale slipping on steeper land	Strategic planting of poplars can reduce but not eliminate risk of slipping on steepland slopes Areas of deeper soils support productive pine forest (but remain slip-prone); slippage may be reduced with pine cover in some areas Planting poplars where rubble has accumulated at the base of slopes can sometimes prevent further erosion
Gully erosion	All these soils; Takitu gravelly clay loam (hill variant) soils in particular	Rubbly areas are susceptible to deep seated slips and gullying Both gully and slip areas can be difficult to revegetate because of accumulated clay in subsoil or extremely dry, friable topsoils	Consider retiring very steep or marginal pastoral land from grazing if pastoral returns are poor and/or weed invasion is a problem Avoid constructing drains or tracks in rubbly areas which are prone to deep-seated movement and gullying

Nutrient management

Soil type	Nutrient status	Management strategies
All young semi-volcanic soils	Iron and aluminium in the topsoil causes these soils to hold phosphate, making it less available to plants	Little and often applications of phosphorus are recommended to provide a more readily available and regular source of phosphate to plants
All these soils	Soils are of medium to high natural fertility, with good supplies of nutrients essential for plant growth. Soils are naturally high in magnesium and calcium but low in potassium	Differences in basement rock make detailed knowledge of soil types and nutrient status essential for good management; seek expert advice for soil testing and fertiliser recommendations

Drainage classes

Soil symbol	Full name	Drainage class
HUIA SUITE Basement rock: Tangihua volcanics Rubbly material erupted from Whangaroa, Whangarei Heads, Tokatoka, Waitakere		
HAS	Huia stony clay and stony silt loam steepland soils	6⇌4 - Excessively to well drained
HAlS	Huia stony silt loam steepland soils	5⇌4 - Very well to well drained
HU, HUH	Hunoke stony clay loam	4⇌2 - Well to imperfectly drained
BM, BMH	Bream clay loam	4⇌2 - Well to imperfectly drained
KATUI SUITE Basement rock: Tangihua volcanics Andesite lava flows on inland slopes of volcanoes that once extended seaward from Mangonui Bluff		
KT, KTH	Katui clay loam	4⇌3 - Well to moderately drained
TU, TUH	Takitu gravelly clay loam	4⇌3 - Well to moderately drained
TE KIE SUITE Basement rock: Tangihua volcanics		
TES	Te Kie stony clay loam steepland soils	6⇌4 - Excessively to well drained
TErS	Te Kie red clay loam steepland soil	6⇌4 - Excessively to well drained
TEuS	Te Kie light brown stony clay loam steepland soils	6⇌4 - Excessively to well drained
AK, AKH	Awapuku clay loam	4⇌1 - Well to poorly drained
TWH	Tokawhero stony clay	3⇌1 - Moderately to poorly drained
C5, C5H	Haunga clay complex	3 - Moderately drained

Tangihua volcanic hill country

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**