

Recent alluvial soils

Soil types in this group

- Kaipara clay & clay loam – KP
- Kaipara peaty clay loam – KPy
- Kaitaia clay loam – KA
- Kaitaia peaty clay loam – KAy
- Mangakahia silt loam & clay loam - MF
- Mangakahia mottled clay loam – MFm
- Whakapara sand – WFa
- Whakapara silt loam & clay loam – WF
- Whakapara mottled clay loam - WFm

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



0-18 cm
dark grey brown to
dark brown clay loam

18-25 cm
brown silty clay loam

>25 cm
brown to dark
yellowish brown silty
clay loam

Mangakahia silt loam and clay loam (MF) soil profile

Features of recent alluvial soils

- These soils occur on floodplains
- They are part of the Kohumaru, Kaipara and Whareora soil suites
- While relatively fertile, land use can be impacted by flooding at times
- As streams overflow banks, they drop coarse sediment, sand and silt close to the stream, forming relatively free draining silt loams
- Finer sediment, silts and clays are deposited further from streambanks where the finest clays settle in hollows, forming clay loam and clay soils
- Upper valley floodplains have coarse sediment soils (silt loams), while lower valley floodplains support fine sediment soils (clays and clay loams)
- Fluctuating water tables in floodplains cause heavier textured clay soils to become gleyed
- Gleyed soils can be mottled and are sticky, waterlogged, and sometimes anoxic (without oxygen)

Structure and drainage management

Issues	Management tips
Fluctuating water tables in basins/hollows cause heavy clay soils to be gleyed	Careful management is required to prevent soil compaction under both arable and pastoral farming
Pugging causes soil structure collapse, anoxic and acidic conditions. These conditions favour unpalatable weed species such as pennyroyal	Timing of cultivation is particularly important on these winter-wet soils to protect soil structure
Periodic flooding can 'refresh' soils by adding nutrients; however a thick layer of silt can smother paddocks with a structureless layer of unproductive silt causing anoxic conditions	Shallow ripping, liming and reseedling can rehabilitate lightly pugged areas, or areas smothered with silt
Gley soils are heavy and slower to warm up in spring than soils closer to riverbanks, which delays spring pasture growth and conditions suitable for cropping	Minimise or avoid cultivation of areas prone to particularly fast flood flows to avoid loss of topsoil
	Maintain drainage networks to reduce waterlogging

Erosion control

Erosion risks	Soil type	Specific problems	Possible solutions
Streambank erosion	All recent alluvial soils	<p>Fast flowing water, especially in upper catchment reaches, undercuts banks and causes slumping and soil loss into water</p> <p>In lower reaches of catchments, gradient is gentle and rivers meander. Gravel and sediment are deposited on inside bends directing flow to the outside bends causing bank erosion</p> <p>Bank erosion contributes large volumes of sediment to rivers, adversely affecting harbour systems</p>	<p>Fence to exclude stock from stream banks</p> <p>Plant shrubby willows to control streambank erosion. Willow roots form a fibrous mat that protects from scouring of stream bed</p> <p>Gravel can be harvested little and often from inside bends to reduce erosion, check current regulations</p>
Floodplain erosion	All recent alluvial soils	<p>Fast flows can erode exposed soil from paddocks</p> <p>Heavy stock on waterlogged soils cause extreme pugging, loss of soil structure and production</p>	<p>Identify areas of fast flow and avoid cultivation in these pathways</p> <p>Maintain dense grass covers</p> <p>Avoid constructing drains along direction of floodwater flow</p>



Whakapara silt loam and clay loam (WF) on narrow alluvial floodplain

Nutrient management

Soil type	Nutrient status	Management strategies
All recent alluvial soils	Nutrient status varies widely over time and position on the floodplain. MF and WF soil types are regularly refreshed with sediment so are capable of high arable and pastoral production	Fertiliser regimes must be tailored to local conditions and drainage. Conduct regular soil tests and discuss options with your fertiliser consultant
MFm and WFm soil types KA, KP, KAy, KPy soil types	Waterlogging tends to reduce pH, making nutrients less available to plants	Lime requirements will be higher than for MF or WF; subsoil drainage improvements may not solve wetness problems

Drainage classes

Soil symbol	Full name	Drainage class
KOHUMARU SUITE Based on alluvium (mainly) from Tangihua volcanics		
MF	Mangakahia silt loam and clay loam	4 - Well drained
MFm	Mangakahia mottled clay loam	2 \Rightarrow 1 - Imperfectly to poorly drained
WHAREORA SUITE Based on alluvium (mainly) from sedimentary rocks		
WFa	Whakapara sand	4 - Well drained
WF	Whakapara silt loam and clay loam	4 \Rightarrow 3 - Moderately to well drained
WFm	Whakapara mottled clay loam	2 \Rightarrow 1 - Imperfectly to poorly drained
KAIPARA SUITE Gleyed soils based on estuarine clays, sands and alluvium		
KP	Kaipara clay and clay loam	1 \Rightarrow 0 - Poorly drained to no natural drainage
KA	Kaitaia clay loam	1 \Rightarrow 0 - Poorly drained to no natural drainage
KPy	Kaipara peaty clay loam	0 - No natural drainage
KAy	Kaitaia peaty clay loam	0 - No natural drainage

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