

Growing with KiwiFibre.

Find out how growing with us creates
regenerative value for you.

Harakeke.

Harakeke or phormium tenax, is a plant from the lily family and is native to New Zealand. It has broad, long leaves and grows in a family structure. Grandparent leaves surround the inner parts of the plant, called the parent and child leaves. The outside grandparent leaves are harvested yearly, an activity which makes the plant resilient to disease and encourages growth.

The plant follows a unique life cycle explained later in this document. Harakeke sequesters carbon and absorbs nutrients, hence contributing to cleaner waterways.

It is also incredibly resourceful. It produces more than just fibre, but also leaf gel, root extract and seed oil. These are valuable resources in a wide range of industries.

A Brief History.

These characteristics of the harakeke plant were well understood by Māori, the indigenous people of New Zealand. Māori used fibre for clothing, bags, tools, hunting traps and more. They also used gel, seeds and extracts in rongoā/medicine

In the mid 1800s, European settlers arrived in New Zealand and one of the first large industries they established, built machines for, and industrialised was harakeke fibre. Soon enough, harakeke was a high-value export. In 1890, nearly 20,000 tonnes of fibre was exported. Most fibre went into rope-making, as it was a much stronger rope than the sisal and hemp ropes the world was used to. The world appreciated the strength, toughness, and resilience of harakeke fibre.

By the mid-20th century, synthetic fibres entered the market and drove the harakeke industry into the ground. Today, a handful of mills exist and the memory lives on as a significant part of New Zealand's history.

Now, harakeke fibre is making a comeback.

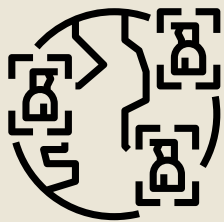


About KiwiFibre.

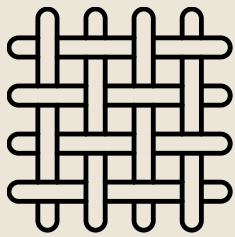
KiwiFibre creates natural fibre composite materials from harakeke - one of the world's strongest natural fibres.

Being a supplier to KiwiFibre is a great opportunity if you have existing harakeke plants, are already planting areas in harakeke or are planning to do so.

KiwiFibre doesn't just produce and market composite materials. KiwiFibre, along with our partners, build the machinery, processes, infrastructure and grower capability needed to supply harakeke materials to the world.



We listened to market demands for a regenerative, low carbon replacement for carbon fibre.



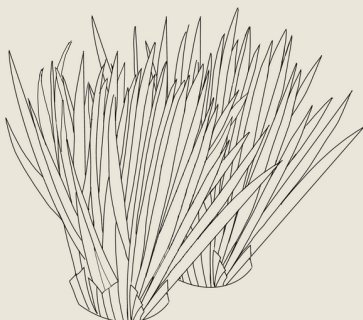
We built the products the market demanded, high performance regenerative composite materials.



We built the machines and processes, taking leaf to product.



We form partnerships to scale leaf processing capability, meeting market demand.



We work with growers to build leaf supply across the country, meeting market demand.



Reinforced

:by Nature

Harvest.

Technique.

Harakeke is a perennial plant which is a taonga to Māori and must be treated with respect. Harakeke fans are harvested by removing the outer 6 leaves from the fan, leaving the inner 3 leaves to grow. This aligns with tikanga practices where the outer tupuna (grandparent) leaves are harvested while the inner, awhi rito (parent) and rito (child) leaves are left to grow

Conditions.

Harakeke cannot be harvested while it is raining. This is in alignment with tikanga, protects plant health, preserves fibre quality, and protects your fingers.

Labour.

Harvesting harakeke is physical work and may not be suitable for some people to perform. KiwiFibre is working to minimise the labour burden of harvesting harakeke through partnering with plant harvesting companies to provide contract harvesting services to growers.



Better

:by Nature

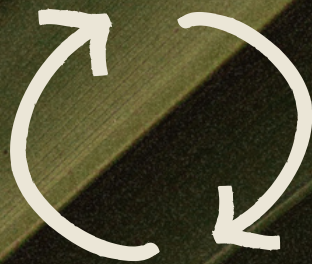
Harakeke - Lifecycle Overview.

Plant once.

Harakeke is planted strategically in patterns which allow for ease of access for harvest.

Harvest.

The outside (grandparent) leaves are removed, allowing the next generation to thrive. This prevents disease and promotes growth.



Capture.

Harakeke sequesters carbon and absorbs nutrients, contributing to cleaner waterways and possible carbon credits.

Expand.

Parent leaves become grandparent leaves and can be harvested again. A few years later, the plant family can be split and replanted elsewhere.

Grow.

Seedling to maturity takes 36 months. Harakeke grows outwards in a family structure: child, parent, grandparent.

On Farm Benefits.

- ⊗ Optimised land use.
- ⊗ Diversified farm income.
- ⊗ Increased on farm biodiversity.
- ⊗ Regenerative value creation from non-productive land.
- ⊗ Improved catchment flood resistance.
- ⊗ Create a carbon-negative source of value.

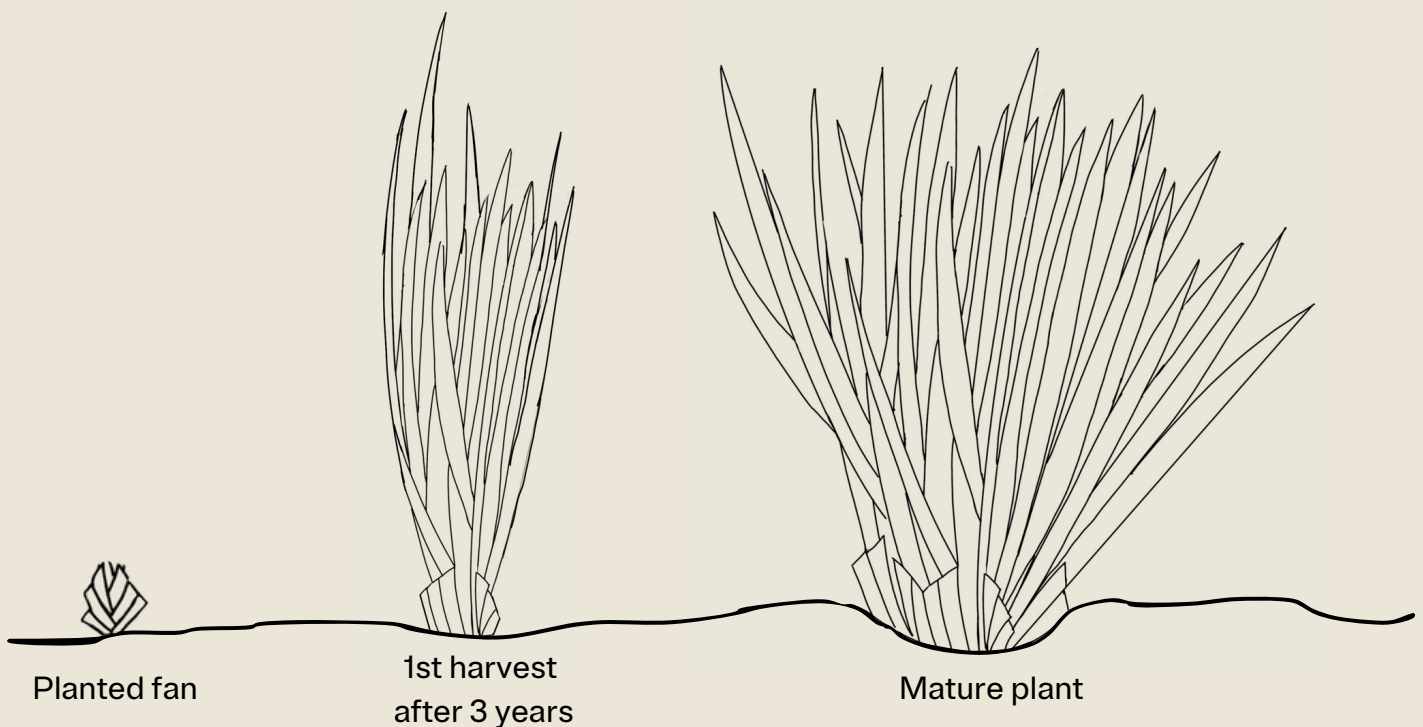
Growing Harakeke.

Harakeke is suitable for planting in wet areas, riparians and floodplains. Harakeke prefers well drained soils but will thrive in swampy soils. It is capable of surviving flooding, even slowing flood waters, and is very happy growing on the edge of streams, lakes and ponds. Harakeke prefers areas with high rainfall but will grow in dry areas.

Typical plant spacing for harakeke planted for harvest is 1.5m. This allows ample room for people to access plants for harvesting, bundling and carrying leaves out of the planting. Plants are also set back by 1m from electric fences to avoid leaves shorting those fences. To prevent the planting becoming too dense for ease of harvest it must be harvested yearly. KiwiFibre only accepts harakeke of the Ngaro cultivar due to its superior fibre properties.

Planting with a 1.5m spacing allows for 1,000x 0.5m-diameter plants per km strip (fence line, shelter belt, waterway etc) and up to 3500 plants per hectare (strategic regeneration planting).

We also recommend planting a variety of other natives in sporadic bunches around your planting, to provide habitat for native birds etc. These birds help to control pests such as window and notch moths.



Grower Opportunity.

Harakeke is harvested annually, with a leaf harvest season between March and September. Harvests are pre-booked based on fibre processing capability, with growers having the option of harvesting themselves, or contracting a harvesting team to perform the harvest for them.

Each mature plant can yield up to 100 leaves per harvest, resulting in a dry fibre weight of up to 20 kilograms. KiwiFibre purchases harakeke leaves from growers based on the dry fibre weight extracted from the leaves. The grower delivers freshly harvested leaf to KiwiFibre processing locations, then KiwiFibre provides payment for dry fibre upon the completion of fibre extraction, cleaning and drying processes.

KiwiFibre enters long term supply agreements with growers, ensuring price and supply consistency. KiwiFibre manages supply and demand closely, ensuring that our customers have access to high quality composite materials.

Fibre Extraction Locations:

KiwiFibre currently has one fibre extraction plant, based in Christchurch which services the Canterbury region.



Disclaimer.

The information in this document is subject to change and is based on best available knowledge. Research is still to be completed into optimal planting patterns, plant sourcing and plant growth rates. Information is still to be collected into the economics of maintaining and harvesting harakeke plantations. The information in this document should only be treated as such, and is not advice for land use decisions.

Fibre pricing is subject to change without notice, fibre demand quantities are also subject to change without notice. KiwiFibre withholds all responsibility for plantations not being able to process leaf for any reason, inclusive of lack of demand quantities, transport cost burdens and lack of regional processing capability.

KiwiFibre withholds responsibility in the event of there not being a market for harakeke in the future and the potential losses of investments into harakeke plantings. KiwiFibre works to ensure we match harakeke leaf supply to market demand, and will not onboard farms if market demand is not adequate.

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