

Introduction

In the last six months we have seen enabling technologies emerging from the consolidation of research that has been underway since 2013. The upcoming HTHF conference in August 2018 will be a great opportunity for our scientists to showcase their work.

February saw arborists from the Living Tree Company scaling heights to collect seed for the kauri screening programme. We're also pleased to report the completion of the 'kauri hygiene' shadehouse, which is now in full use.

Check out the conference details at the bottom of the newsletter, we hope to see you there.

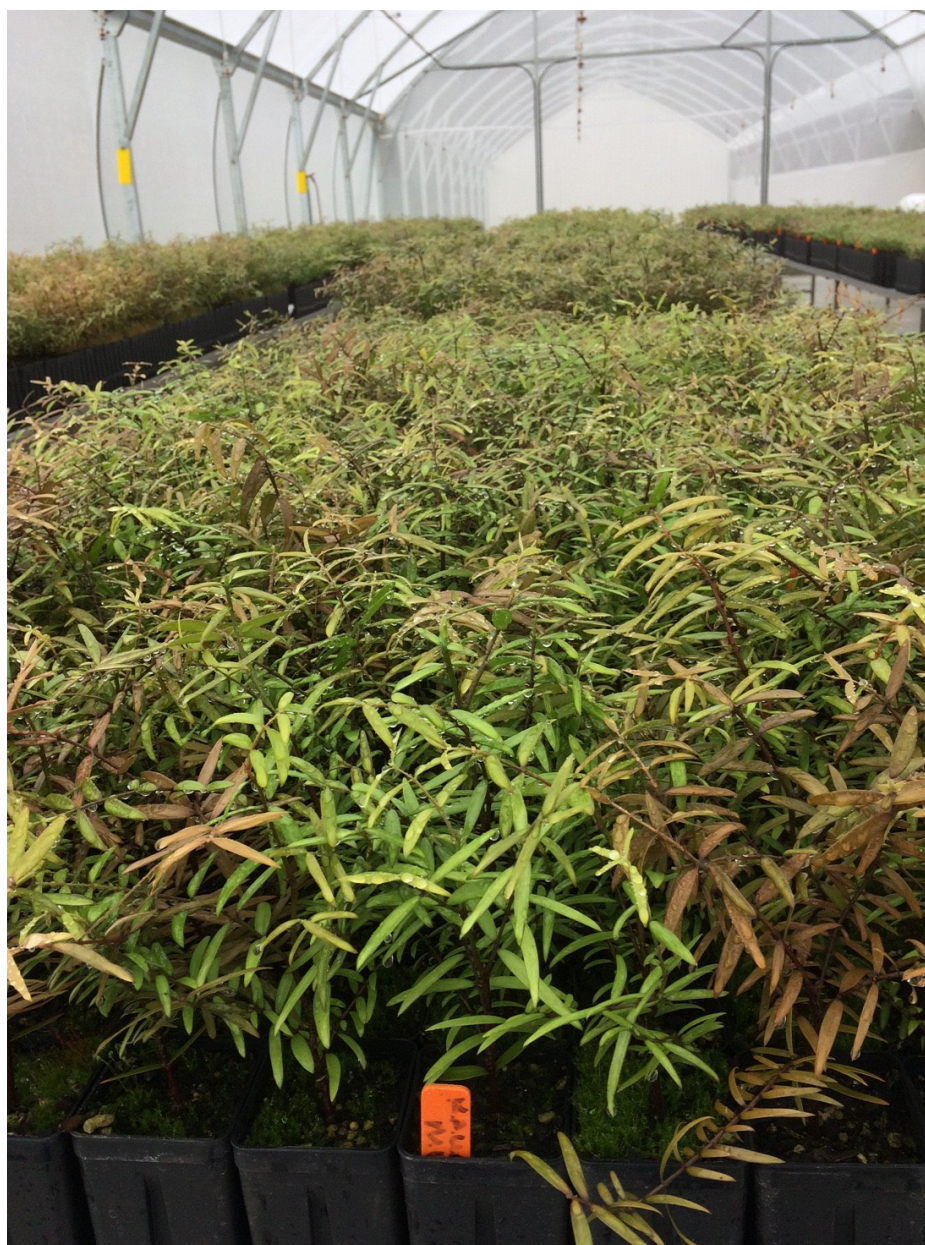


2017 kauri seedlings inside the Kauri hygiene polyhouse space (April 2018).

Seedling screening results

The first kauri seedlings in 2016 were tested against *Phytophthora agathidicida* at three months old. Observations showed that the infection grew as quickly as the seedlings did. As a consequence, a further screening was carried out at 15 months by Stan Bellgard and his team at Manaaki Whenua in Auckland. The seedlings were infected with intermittent flooding reflecting the infection processes in the field and to ensure 100 percent infection.

The first part of this work is making sure that we have an effective method of infecting seedlings to ensure we can see their response to the disease. An exciting result from this trial is that six months after infection, a variety of resilience responses have been seen, with one family still showing 50% survival. This result supports our observation of varied resilience to *Phytophthora*.



2017 kauri cone collection seedlings in the newly completed kauri hygiene 'shadehouse' facility, an extension to the polyhouse hygiene facility.



Collecting cones (Photo The Living Tree Co).



A slingshot being used to shoot a weight over a kauri branch (Photo Manaaki Whenua).

2018 mana whenua seed collections

Recommendations from the 2017 HTHF science review were to take the next kauri seed collections from areas with a longer known history of the presence of *P. agathidicida*.

In February/March 2018 a team of four pathologists from Manaaki Whenua (Stan Bellgard and team) set off to collect cones accompanied by Fredrik Hjelm and his team from The Living Tree Company, DOC, and Auckland Council, armed with permits and a thorough dieback management strategy.

Te Roroa and Kawerau a Maki kaitiaki guided the team through the Waipoua and Waitakere forests where dizzying heights were scaled to collect cones from 92 sizeable kauri in total. All the trees were healthy looking and situated in areas known to have *P. agathidicida* present.

The Living Tree Company team were impressive not just for their climbing abilities but also their care and respect for tikanga Māori, cleanliness and carrying out the hygiene protocols required in these areas. Assessing the specific risks associated with climbing, and additional hygiene protocols included, but were not limited to ensuring:

- Ropes and climbing gear did not touch the ground and become contaminated.
- Dirt on researcher's boots and clothes did not get transferred between sites.
- Seeds and collection bags did not touch the ground and become contaminated.

The seed from these 90 odd trees has now been sown under strict hygiene protocols in the Scion Nursery kauri hygiene polyhouse facility in sterilised seed raising mix.



Keeping all the gear off the ground (Photos Manaaki Whenua).



Te Roroa cone collection team – Manaaki Whenua, The Living Tree Co and Te Roroa.

Junior kaitiaki from Whakarewarewa School visit Northland with HTHF

A class of Year 4-6 children from our neighbouring school Whakarewarewa Primary visited Scion in February 2018 and were introduced to kauri dieback and what we're doing to help Northland mana whenua groups look after their kauri. This included a visit to Scion's lab to see *P. agathidicida* under the microscope then a check of mana whenua kauri seedlings in the nursery. Three lucky students from this visit were chosen to come to Whangarei with their Principal and members of the HTHF team as junior kaitiaki to see the area where our Northland mana whenua kauri seed had come from.



(Top to bottom) Kahurangi, Samantha and Hoani off for an adventure.

Kahurangi, Samantha, Hoani and Principal Hinei Taute participated in a pōwhiri and heard about HTHF research in the morning then were treated to a sight-seeing afternoon visiting local waterfalls, beaches etc before returning to Rotorua that evening. The pupils had a fun time enjoying hotel life and for one it was their first time on an aeroplane.

Kahurangi, Samantha, Hoani and their class mates will continue to be involved in the raising of kauri seedlings in the Scion nursery in their roles as junior kaitiaki to the HTHF kauri seedlings from Northland, Auckland and Tauranga, with opportunities for some hands-on involvement in assessing research trials coming up soon.

"Whakarewarewa students were very privileged to be involved in this Whangarei Haerenga. This has given them a learning opportunity that has demonstrated a national challenge where shared international research could make a positive impact to our current situation," said Hinei Taute. "Thank you to Scion Rotorua for making this happen."



Samantha, Kahurangi and Hoani taking in Northland sights.

Kauri Dieback Operations Team visit to Scion

The team hosted the Kauri Dieback Operations Team at Scion on May 30. They were given an overview of the HTHF Programme and related kauri research, and

visited the lab and nursery for a detailed look at the diagnostics process, the new kauri hygiene facilities and other nursery kauri research.



Kauri Dieback Operations Team members at the Scion nursery.



Enabling technologies to combat *Phytophthora* diseases

HTHF showcase
Kauri breeding and partnerships workshop

21 - 23 August 2018

Conference Venues:
Scion, Te Papa Tipu Innovation Park
and Wai Ora Lakeside Spa Resort

Day one	Pōhiri and visit to Ngāti Whare Indigenous Nursery.
Day two am	Showcasing enabling technologies.
Day two pm	Opportunities and case studies. Visit to Scion Nursery. Conference dinner.
Day three	A roadmap for kauri forest partnerships workshop.

Register through: <https://enabling-technologies-phytophthora.lilregie.com/booking/attendees/new>
For further information check out the website: www.healthytrees.co.nz/news-and-events/
or email: vicky.hodder@scionresearch.com

To learn more about this programme

Contact Dr Nari Williams at nari.williams@scionresearch.com
Visit our website www.healthytrees.co.nz

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