NZASE scientist profile

Plant protection scientist Aleise Puketapu

Aleise feeding her steer Pango on her lifestyle block near Marton.

Born

1986, raised in Whanganui.

Pēpeha

"He uri ahau nō Te Ātiawa, Ngāti Toa Rangatira, Ngāti Raukawa ki te Tonga, Ngāi Tahu, Ngāti Māmoe me Ngāti Koata.

"With my whānau on my mum's side, I'm re-learning and reasserting our whakapapa.

"Mine on this side of my whānau starts around Foxton and continues (as far as we know) down to the Chatham Islands. It is so interesting and liberating learning about whakapapa and identity."

Schools and subjects

St Anne's Parish School and Marcellin School in primary and intermediate, and Sacred Heart and Cullinane Colleges, all in Whanganui.

"Science was a core subject at college to year 11, and in year 12 I took Biology, Chemistry and Statistics. I was usually the only Māori and sometimes the only girl in these classes across my schooling."

How she got into science

"My love of animals initially – I wanted to be a vet from very young. I discovered a love of plant science in my first year of university.

"I've always loved science and maths, largely for their logic. I'm methodical, and I find the pathway to getting there is the exciting part. I'm lucky that in my field there is space for creativity, ingenuity and indigeneity.

"I credit my Biology and Chemistry teachers, Mr Costello and Mr O.G., with fostering my science interests and guiding me to a university science degree. Never underestimate the value of good teaching and good teachers."

Training and jobs

2009 BSc in Plant Protection
2010 Post-Graduate Diploma in Māori Resource and Environmental Management;
2011 Master's of Science in Plant Protection, all at Massey University. Aleise also studied te reo and tikanga at Te Wānanga o Raukawa and Te Wānanga o Aotearoa.
2011–now, Research Associate/Senior Scientist, Plant and Food Research.

Field of science

Plant protection, entomology, pest management, mātauranga Māori.

Aleise, front, and friend Moko Morris at Machu Picchu, Peru, on a trip with Te Tāhuri Whenua following the origins of taewa/Māori potatoes to South America. "I gained an appreciation for indigenous peoples and our centuries of relationships". Photo by Nick Roskruge.

Research examples

Biosecurity threats

Aleise has worked in teams in the potato, kiwifruit, avocado and Māori horticulture sectors, trying to control the tomato potato psyllid (*Bactericera cockerelli*), Queensland fruit fly (*Bactrocera tryoni*), brown marmorated stink bug (*Halyomorpha halys*), guava moth (*Cosciinoptycha improbana*) and the fall army worm (*Spodoptera frugiperda*). She has regularly presented results to growers and companies.

Māori horticulture

Aleise co-leads the Growing Futures: The Lightest Tread research area, which explores land-use opportunities with Māori landowners in the Eastern Bay of Plenty to fit their needs and goals. Her team studies the area's land, water and climate, and offers advice on suitable māra kai (traditional Māori vegetable crops) or ahumāra kai (commercial horticulture) options.

Aleise has been a member of Tāhuri Whenua/National Māori Vegetable Growers Collective NZ for 13 years and a committee member for eight.

How she finds things out

She uses genetic analysis, runs field trials of crops and insects, and analyses insect trap catches. "I am lucky to have worked in the field, the orchard, the paddock, the lab, the glasshouse, and at marae and kura. Science nowadays needs much more than lab skills to work."

Aleise planting a peanut crop at Otamaroa as part of a Plant & Food project. Photo by the Ministry of Primary Industries.

Aleise in the lab. Photo: Plant and Food Research.

Most valuable results

"For me, the value of the results of any project lies with the user – industry, growers, public or mana whenua. If our work achieves the users' purpose, it is valuable."

"A highlight for me was being part of a team that developed sustainable tools for our potato industry, to counter extensive damage by the tomato potato psyllid (TPP), which also affects capsicums, chilli and tamarillos."

"The TPP pierces plant tissue to feed on phloem contents, and transmits pathogens to healthy plants that damage fruit and tubers, and kill plants. My team tested the impact of a range of insecticides and beneficial insects on the TPP, including host testing for a parasitic wasp, *Tamarixia triozae*, under strict quarantine.

"Our work and other P&F teams helped target and reduce spraying, setting up monitoring techniques, and integrated control methods for TPP. It highlighted the use of beneficial insects across the potato industry. This saved production costs and improved environmental outcomes for the industry."

Mātauranga Māori

"As indigenous scientists in a Crown-funded institute, we occupy both science and cultural roles. We are always careful not to take over the role reserved for external Māori partners and mātauranga experts under Te Tiriti. Ngā iwi Māori are the owners of their mātauranga.

The key is sticking to the boundaries of our roles as public servants."

"My job is to ensure that mana whenua are able to participate in the science sector, particularly where mātauranga Māori and science meet. I act as a connector of people and expertise, and guide our P&F scientists on ethics and best practice at this interface. This engagement with mātauranga will lead to immense changes in our science system over the next five years."

What she likes about science

"The logic and process through which science is applied aligns with the way my brain works; I also love learning, and as scientists we are continually learning. Through science, I can serve my people, our nation and the world.

"Of utmost importance to me: Our tūpuna were some of the best scientists around, practised through a holistic view of their world, which was largely centred on the environment rather than humans. I hope that my legacy adds to that of our ancestors and enriches the lives of my mokopuna and future generations."

"I have a beautiful māra at home and grow many traditional Māori crops including hue (Lagenaria siceraria)*; my favourite." Photo by Aleise.*

Links

Science Learning Hub, 2023, Mātauranga Māori and science. [*Includes Project Mātauranga video featuring Aleise*.]

Ministry for Primary Industries, 2022, Milestone for Māori agribusiness project.

Kiwifruit Vine Health, 2022, Brown marmorated stink bug monitoring [*6m video with Aleise*].

Plant & Food Research, 2021, Aleise Puketapu: working for my people.

Bay of Plenty Times, 2021, Trial crops planted as part of Māori agribusiness project in eastern Bay of Plenty.

New Zealand's Biological Heritage, 2019, Training up stink bug finders, National Science Challenge.

Science Learning Hub, 2016, Taewa and psyllid resistance. [*Includes Project Mātauranga video featuring Aleise*.]

Moko Morris, 2014, review of *Ngā porearea me ngā matemate o ngā māra taewa: Pests and diseases of taewa (Māori potato) crops*, by Nick Roskruge; Aleise Puketapu, & Turi McFarlane, Te Tāhuri Whenua.

Ngā Kupu

Ahumāra – Horticulture
Huanga kai – Crop
Hauhake – To harvest; harvest
Kaingaki māra – Gardener
Manaakitanga – Hospitality, kindness
Māra kai – Food garden
Oneone – Earth, soil, dirt
Otaota – Plant, weed
Patu otaota – Herbicide
Rangahau – To search out; research
Taonga – Treasure, anything prized.

From Te Aka Maori Dictionary