Plant & Food Research
Rangahau Ahumāra Kai

Sustainability & Innovation in Agriculture

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International Development Unit, Plant & Food Research

The New Zealand Institute for Plant and Food Research Limited

Our mission

To create the world’s most sustainable food production systems

Locations

NEW ZEALAND

AUSTRALIA

USA

Our research

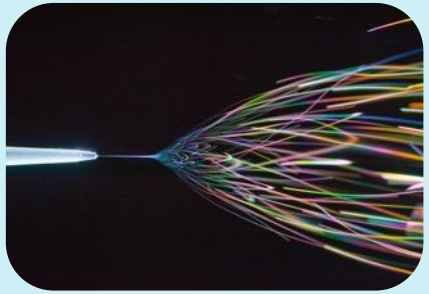
Future plants, fish and foods

Sustainable resilient food supply

Blue skies science for Growing Futures™

Our capabilities

Sensing technology



Total utilisation

Food safety

Biosecurity and crop protection

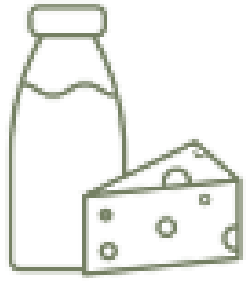
Soil, water and climate

Crop optimisation

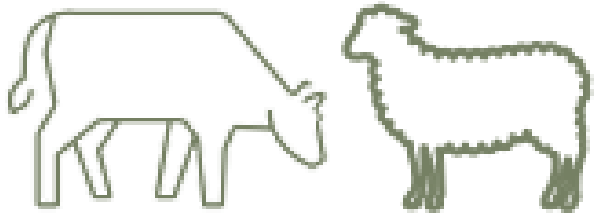
Supply chain optimisation

Conservation and ecology

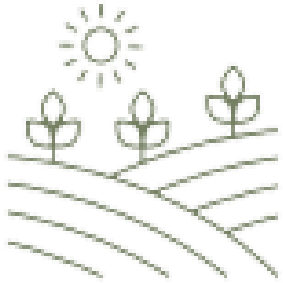
Seafood production



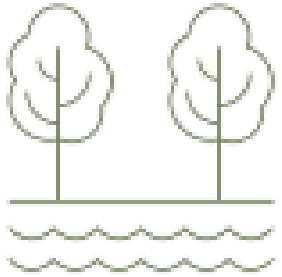
Dairy



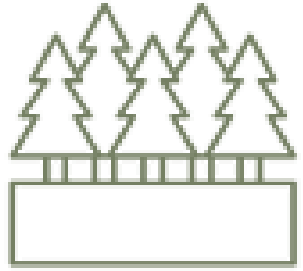
Sheep and beef



Broad acre cropping



Horticulture



Forestry

Drivers of change	Category
Competition for land and water use	Environmental
Severe acute and chronic weather events	Environmental
Access to water	Environmental
Access to capital	Markets
Trade barriers (trade miles / carbon border adjustments)	Markets
Global demand for indigenous products	Markets
New technology advances (accelerated technology capability in alternative proteins, dairy and products - growth of hybrid agri-economy)	Technology
Sustainable farming and nature-based solutions and practices	Technology
Changes to labour force demand and supply	Social
Changing consumer behaviour (demand / preferences / expectations)	Social
Land use change	Policy
Urbanisation of population and growth of cities	Policy

Aotearoa Circle, 2023 report

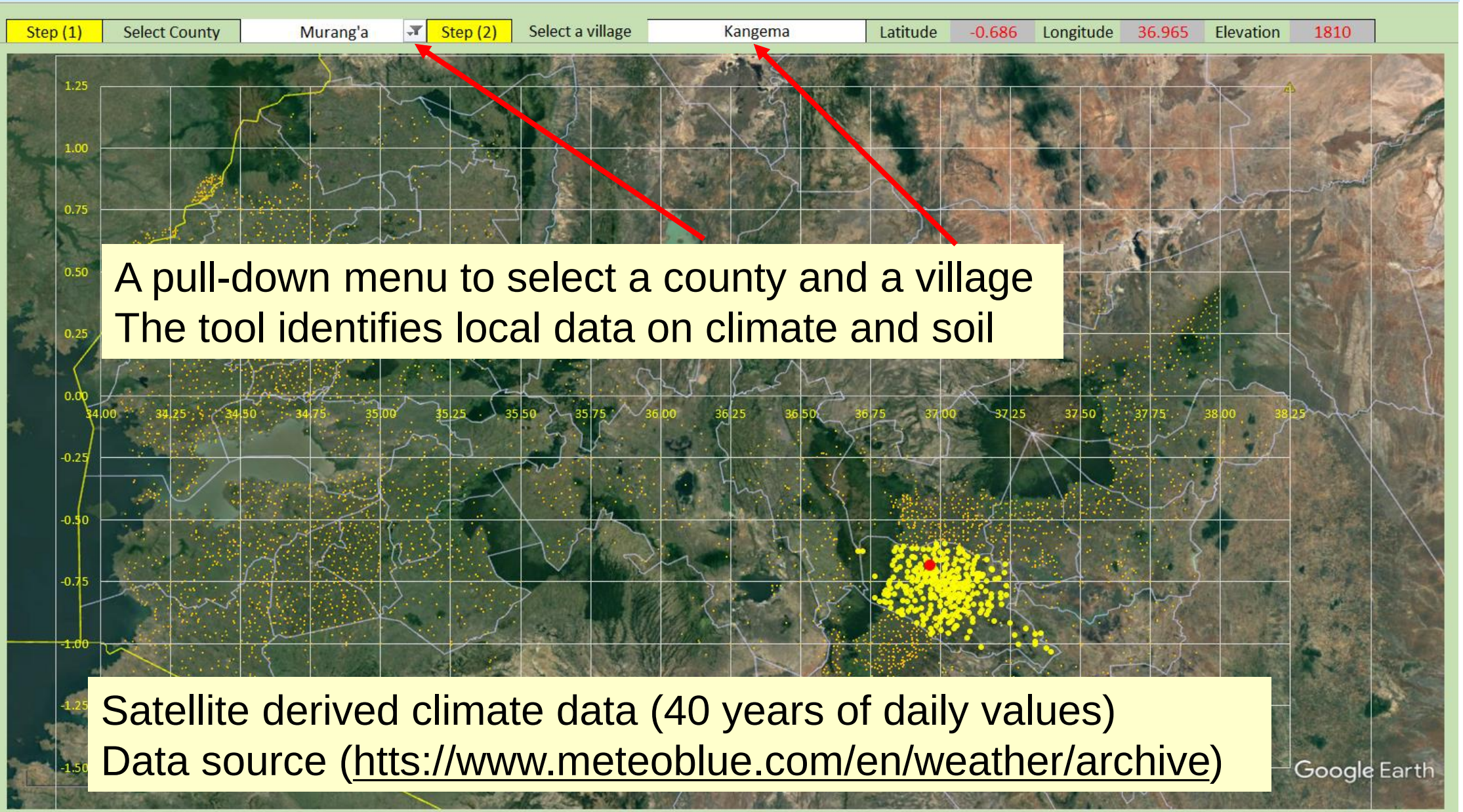
Goals	Objectives
1. **Enhanced knowledge and capability**	Climate change adaptation knowledge, skills, and case studies are accessible for the sector.
2. **Effective investment**	Capital is available and used effectively towards adaptation with embedded good governance to build resilience, change practices, reduce risk, and support stakeholders.
3. **Strategic use of data and technology**	Actions and implementation are empowered through the capture, analysis, and integration of relevant data.
4. **Industry-led innovation**	The sector takes advantage of innovative opportunities, such as ecosystem services and modern genetic technologies to lead the sector's adaptation response.
5. **Collaborative and resilient leadership**	Leadership embraces diverse voices, generates meaningful outcomes, and works towards the same goals both within the sector, and across the whole food system.

Aotearoa Circle, 2023 report

Ag Mattters case study

The landscape…

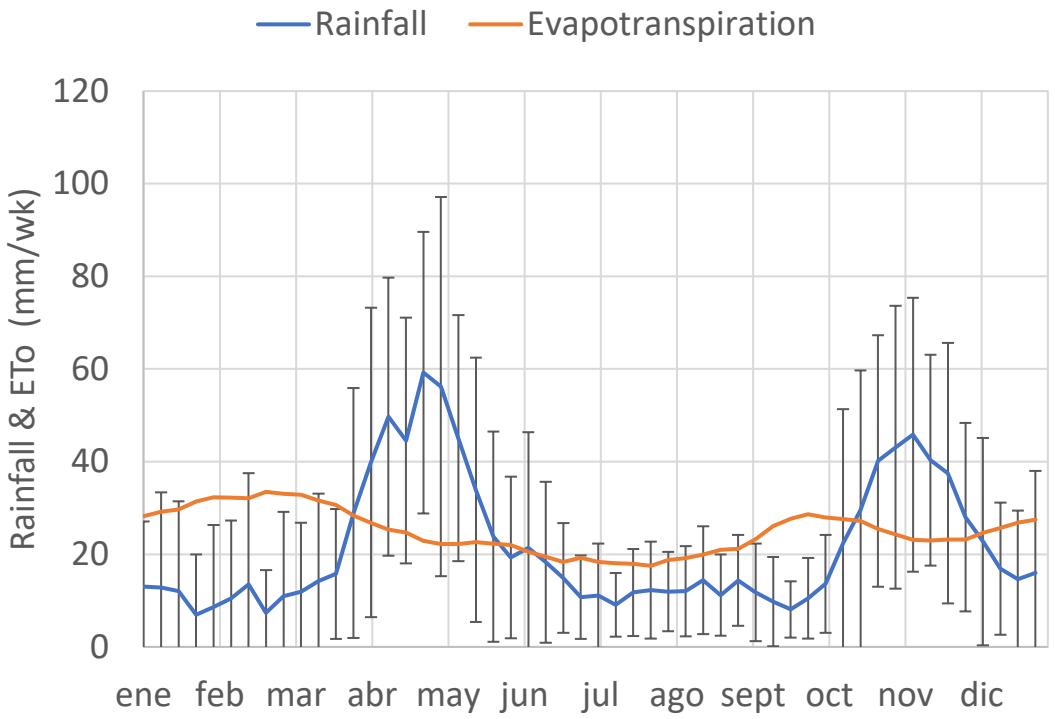
A model for tree water use

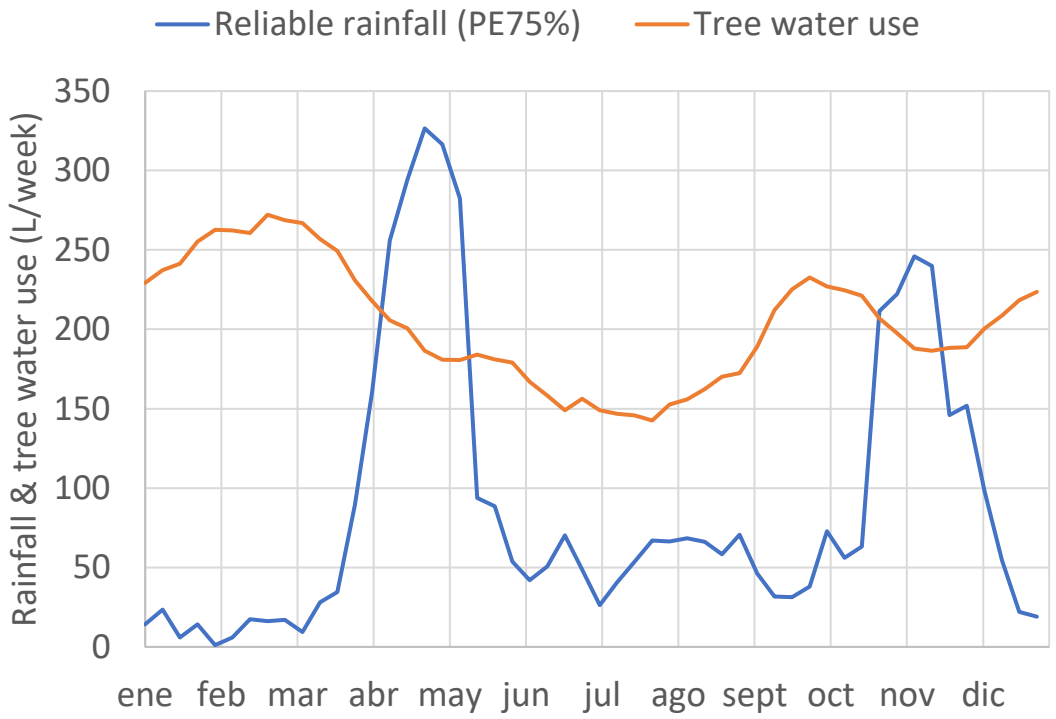


Tree water use depends on

- Tree size and shape
- Leaf area (and density)
- Microclimate
- Soil water availability
- Crop load, tree health …

Climate & Tree water use (weekly)

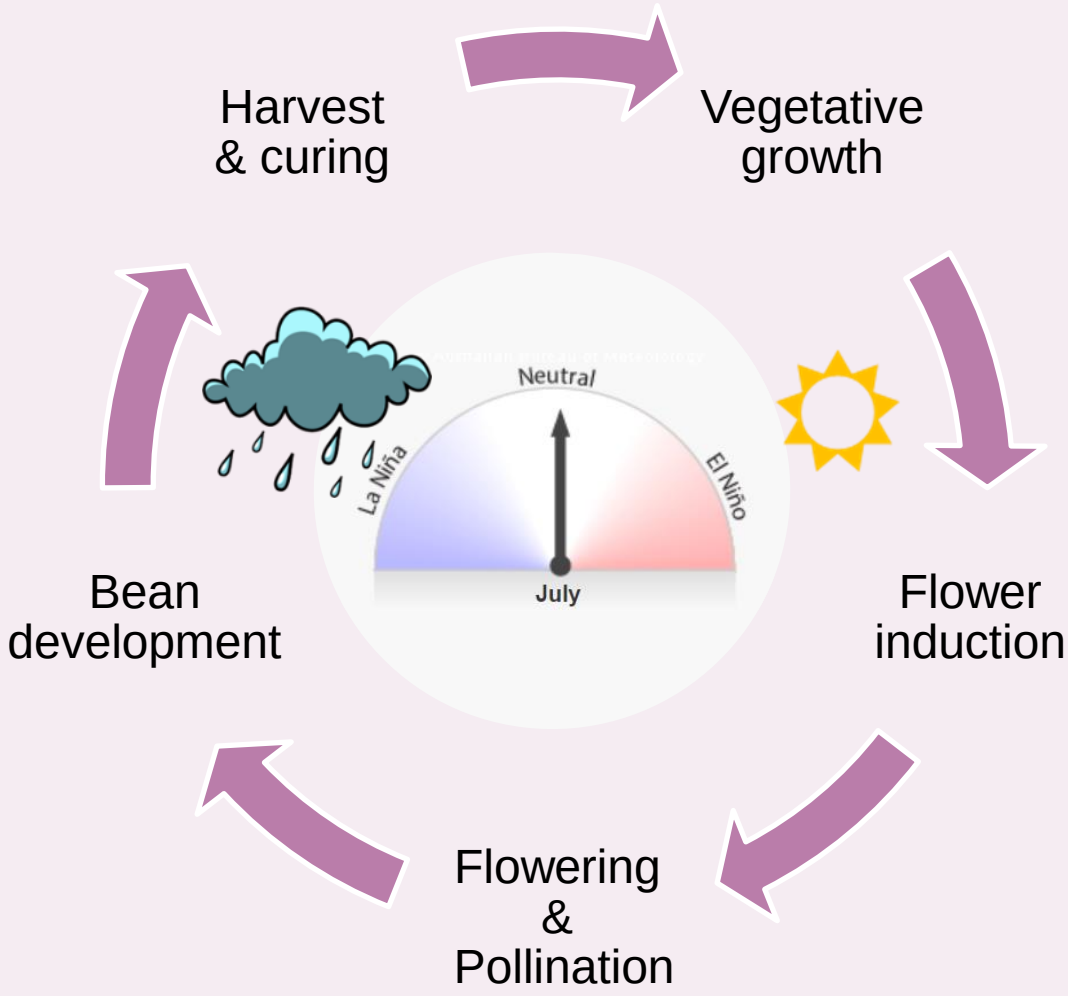




Irrigation needs (L/tree/day)													
Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	20	24	13	0	0	0	6	6	16	0	0	7	8
PE25%	30	32	27	0	0	10	13	12	21	11	0	20	14

Vanilla production cycle and possible of climate impact

Little or no flowering 2016 to 2021



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Thank you

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A smart green future. Together.

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