

TRANSFORMATION ACROSS NEW ZEALAND FORESTRY

Precision Silviculture



CLAIRE STEWART, FOREST GROWERS RESEARCH

 Precision
Silviculture
Programme

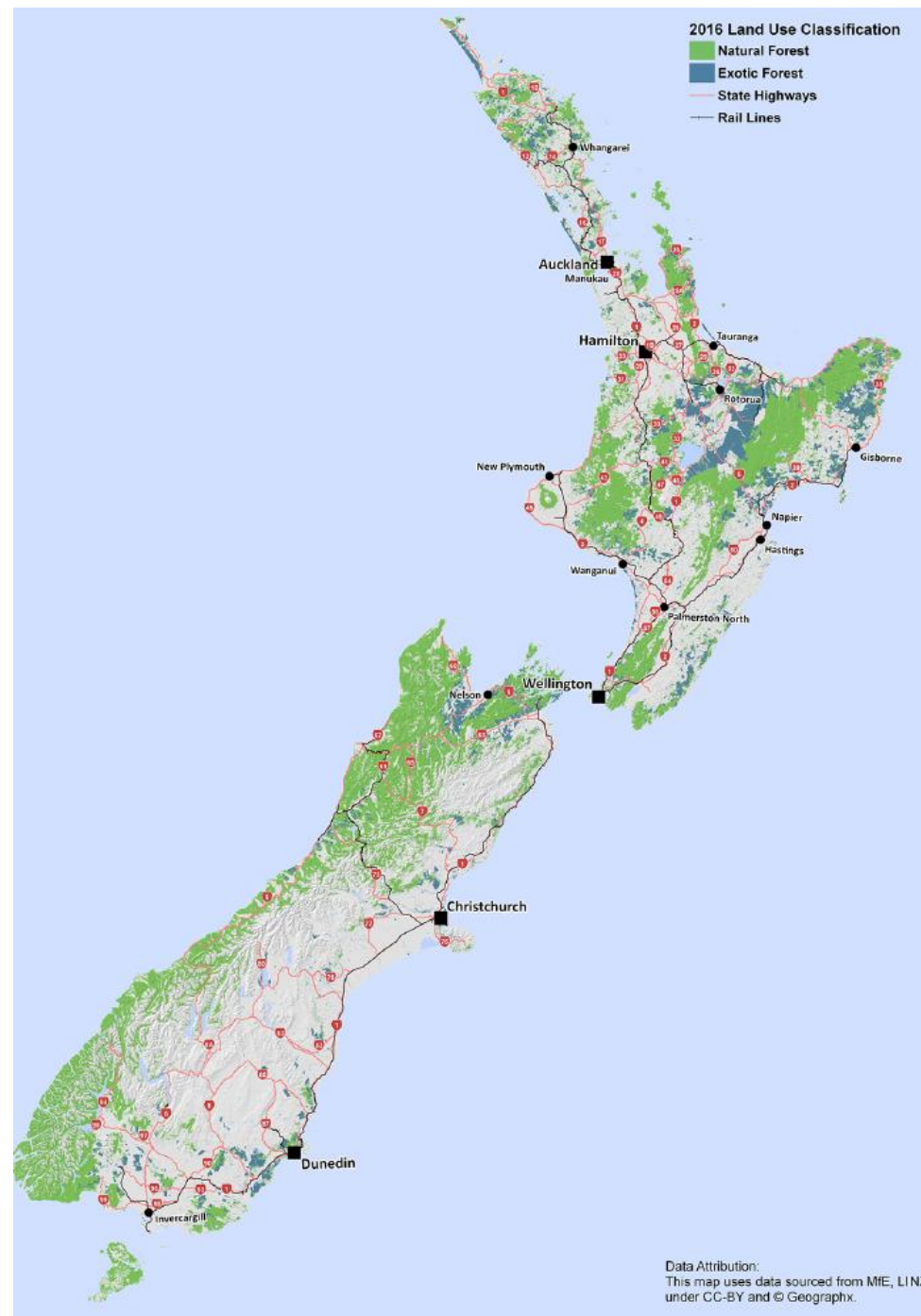
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CONTEXT

New Zealand Forestry



New Zealand has a total of 10.1 million hectares of forests, covering 38% of the land. Of this:

- 8 million hectares are native forest.
- 2.1 million hectares are plantation forest. Of this, 1.7 million hectares is productive (largely *Pinus Radiata*).



Supported by:

Ministry for Primary Industries
Manatō Ahu Matua



supported by
forestgrowers
commodity levy

The Precision Silviculture Programme

\$25.5 million dollar investment by the NZ forest industry and government over 7 years.



Nursery



Planting &
Establishment



Pruning



Thinning



Data &
Engagement

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Silviculture



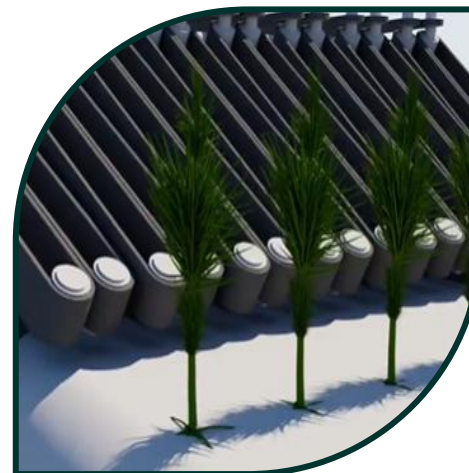


INNOVATIONS

Nursery Innovations



BioScout pathogen sensing



Mechanised lifting



AI seedling grading



Autonomous tree stock monitoring



Precision vegetative propagation



PlantIT- tree & box tracking

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BioScout Sensor

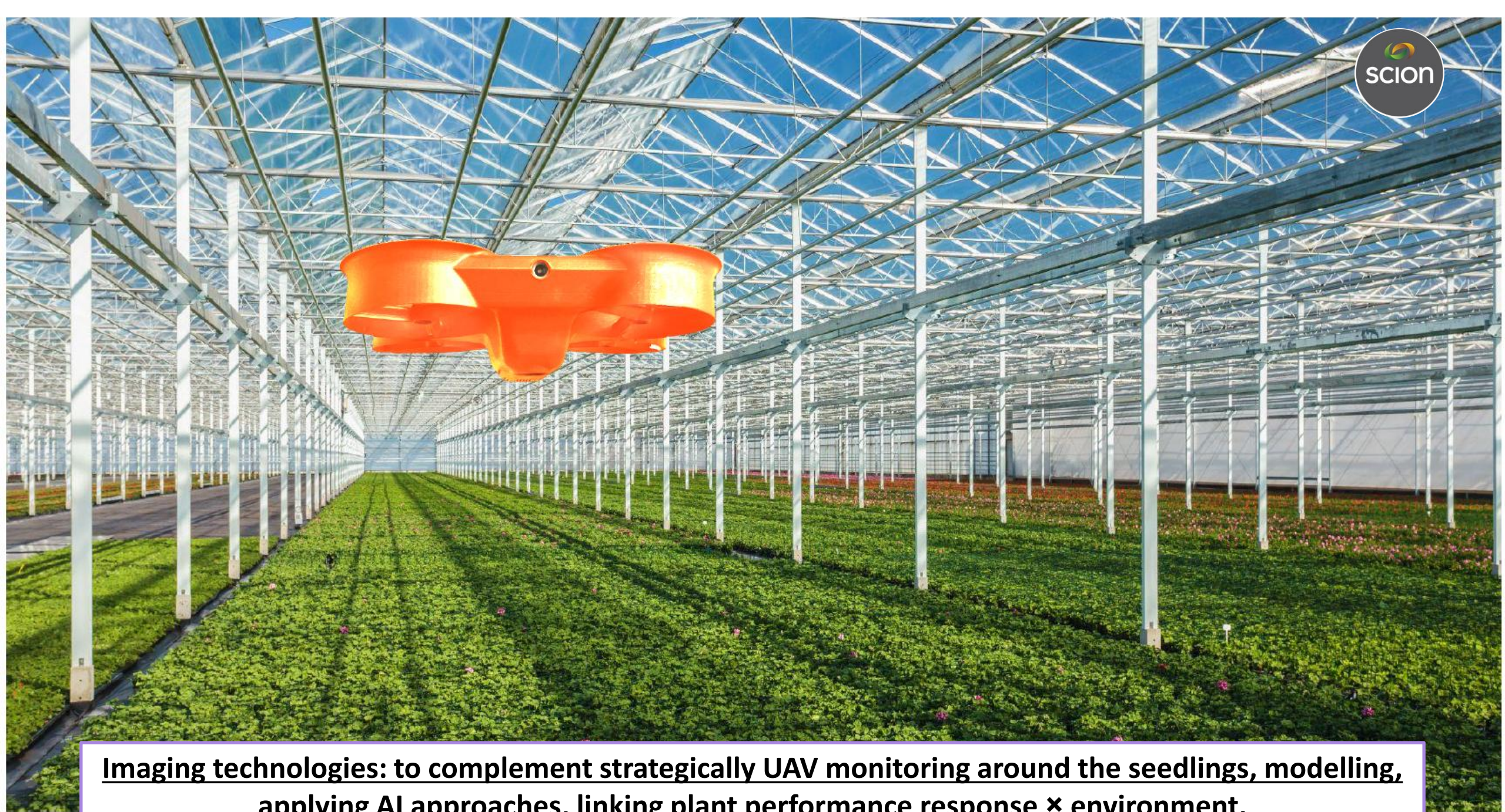
Next generation plant disease management

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Mobile Sensor Platform: to analyse, optimise environmental conditions.
Enhance climate/environmental geospatial analysis



Imaging technologies: to complement strategically UAV monitoring around the seedlings, modelling, applying AI approaches, linking plant performance response × environment.





INNOVATIONS

Planting & Establishment Innovations



GPS Technologies for manual planting



Automated Precision Spraying



Mechanised Planting

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Fundamental science: extending planting season + precision nutrition



S P S
AUTOMATION





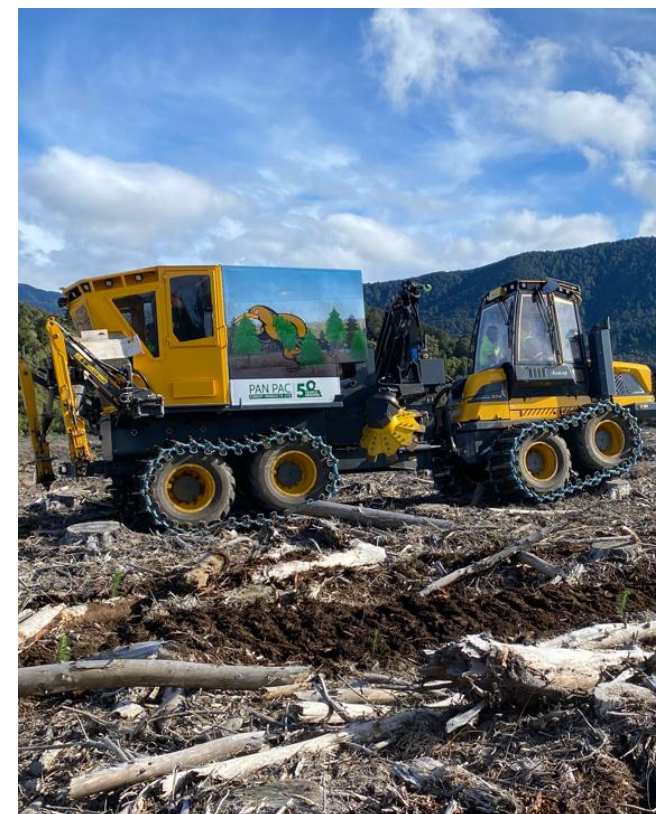
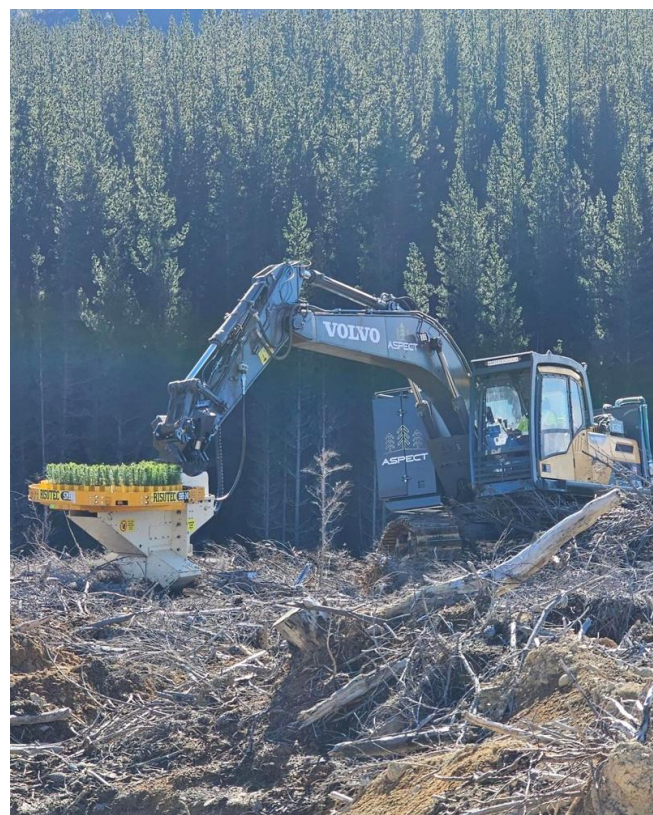
**Mechanised
planting...no one
size fits all
solution for NZ.**



Key platforms trialed in New Zealand

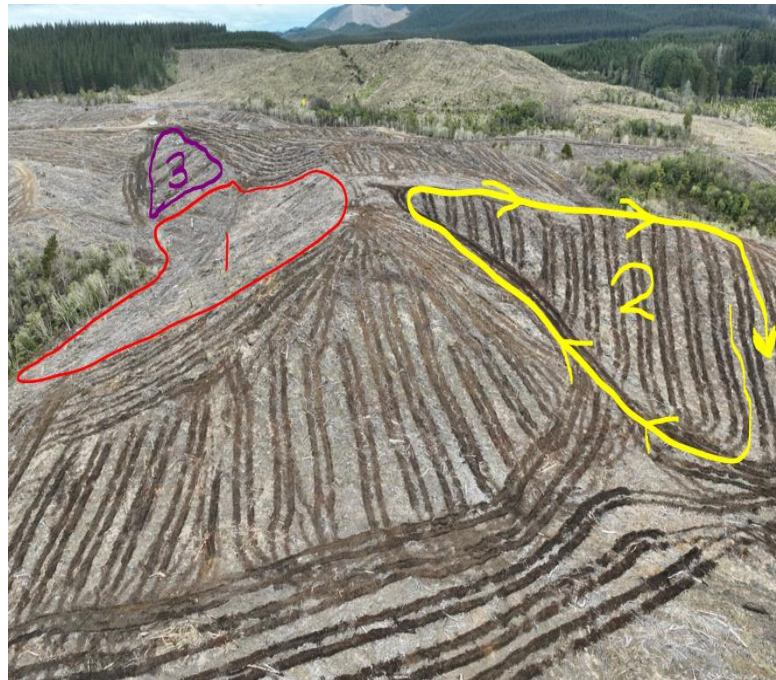
Finnish developed excavator-based M-Planter and RisuTec

Swedish developed PlantMax



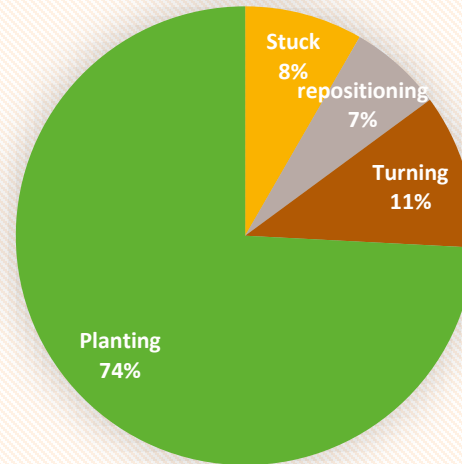


PlantMax Adaption Goals



Increased efficiency and utilisation
of land area (45%)

Utilization of runtime

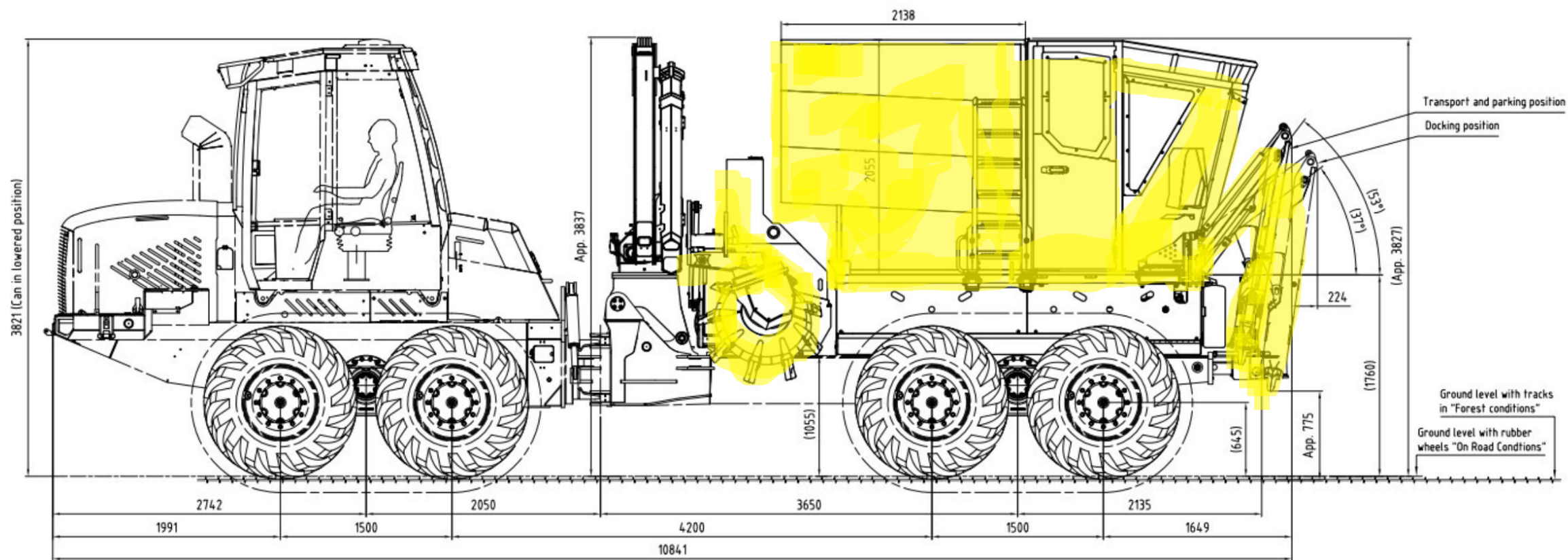


■ Stuck ■ repositioning ■ Turning ■ Planting

Increased utilisation of runtime (25%)



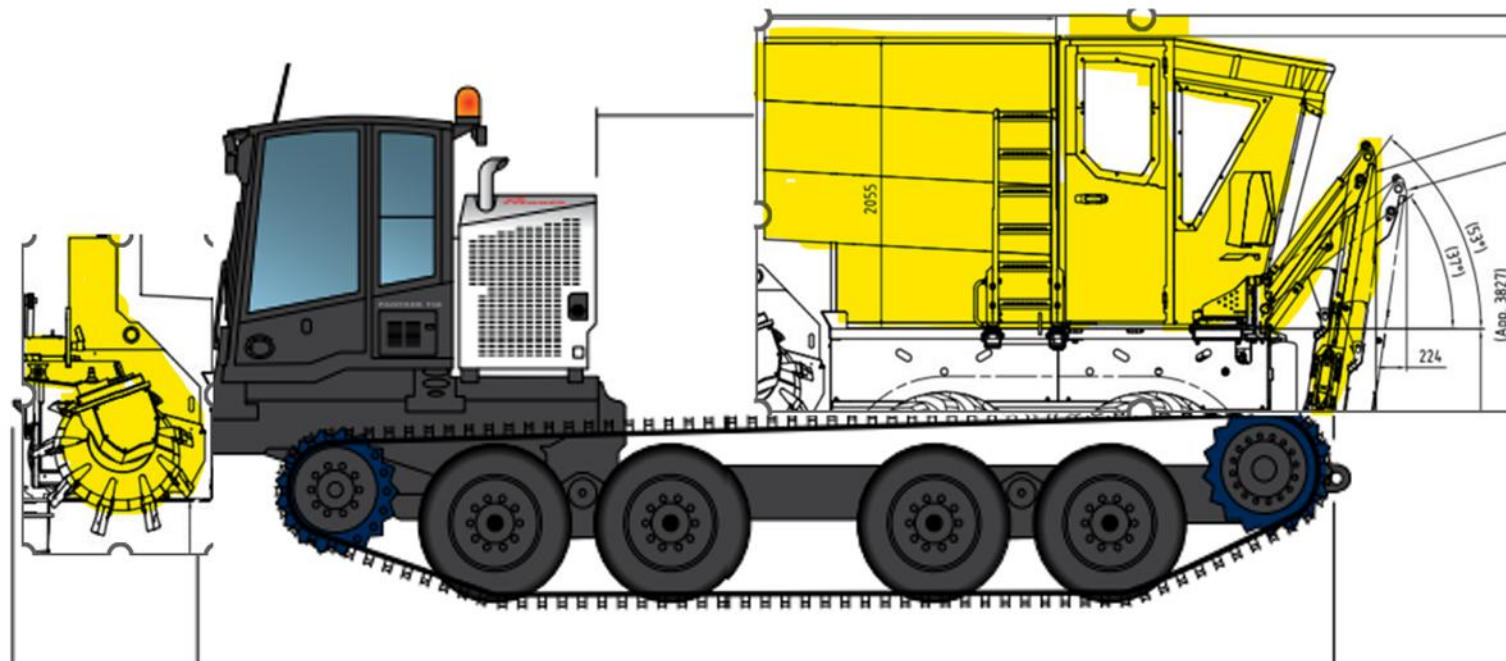
Increased safety





Tracked Carrier

“Clip-on”







INNOVATIONS

Pruning innovations underway



**Improved
hand tools**



**Mechanised
pruning**



INNOVATIONS

Mechanised pruning

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INNOVATIONS

Pruner improvements

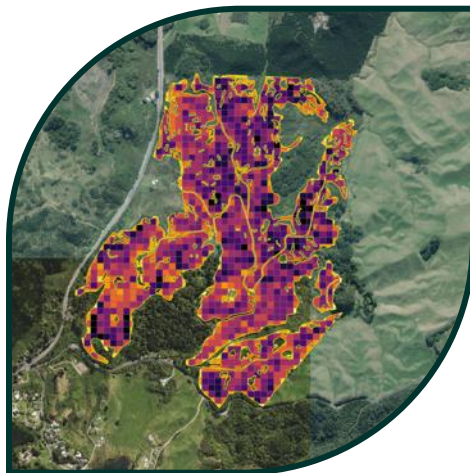


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INNOVATIONS

Thinning innovations underway



TreeTools



**Forest System
Design/VR**



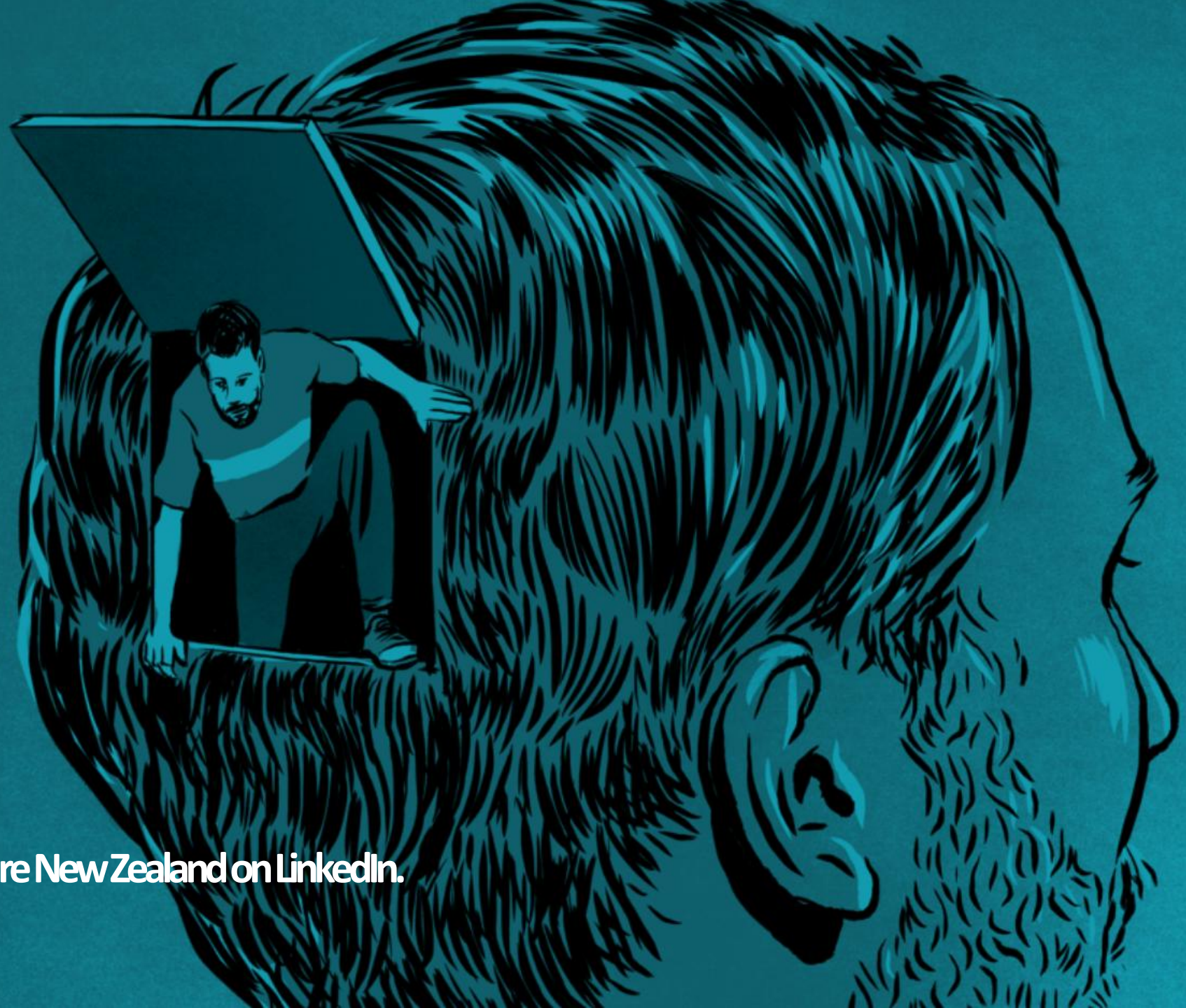
**Light-weight Thinning
Machine**

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Back to reality!



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