

RIPPA and Ladybird Projects: Functionality and industry updates

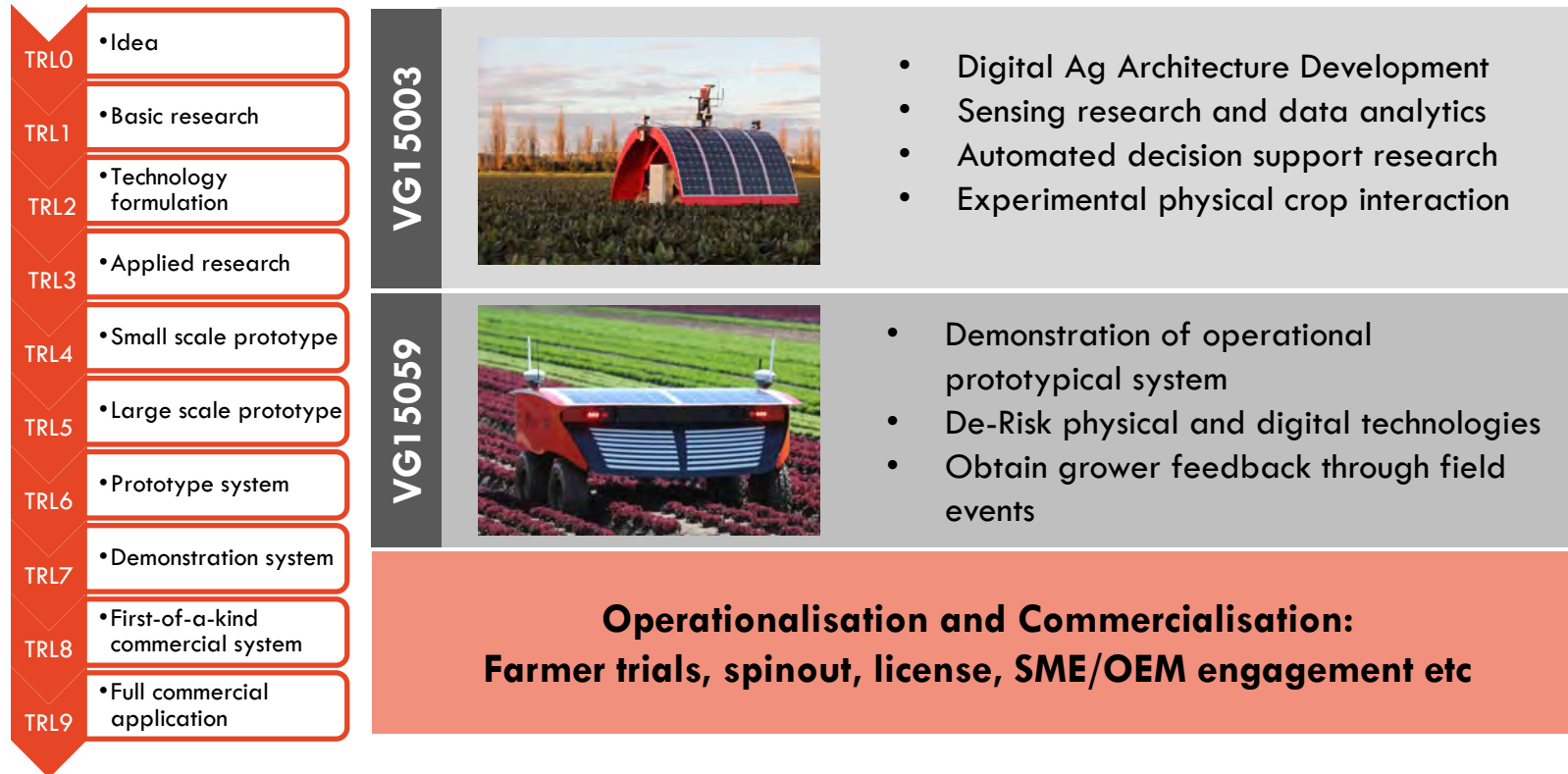
VG15003 and VG15059

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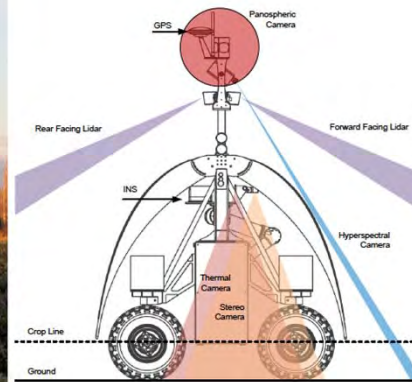
Program Relationship



Ladybird – Science and Research Platform



(a) scanning a field



(b) sensor configuration



(c) covers lifted

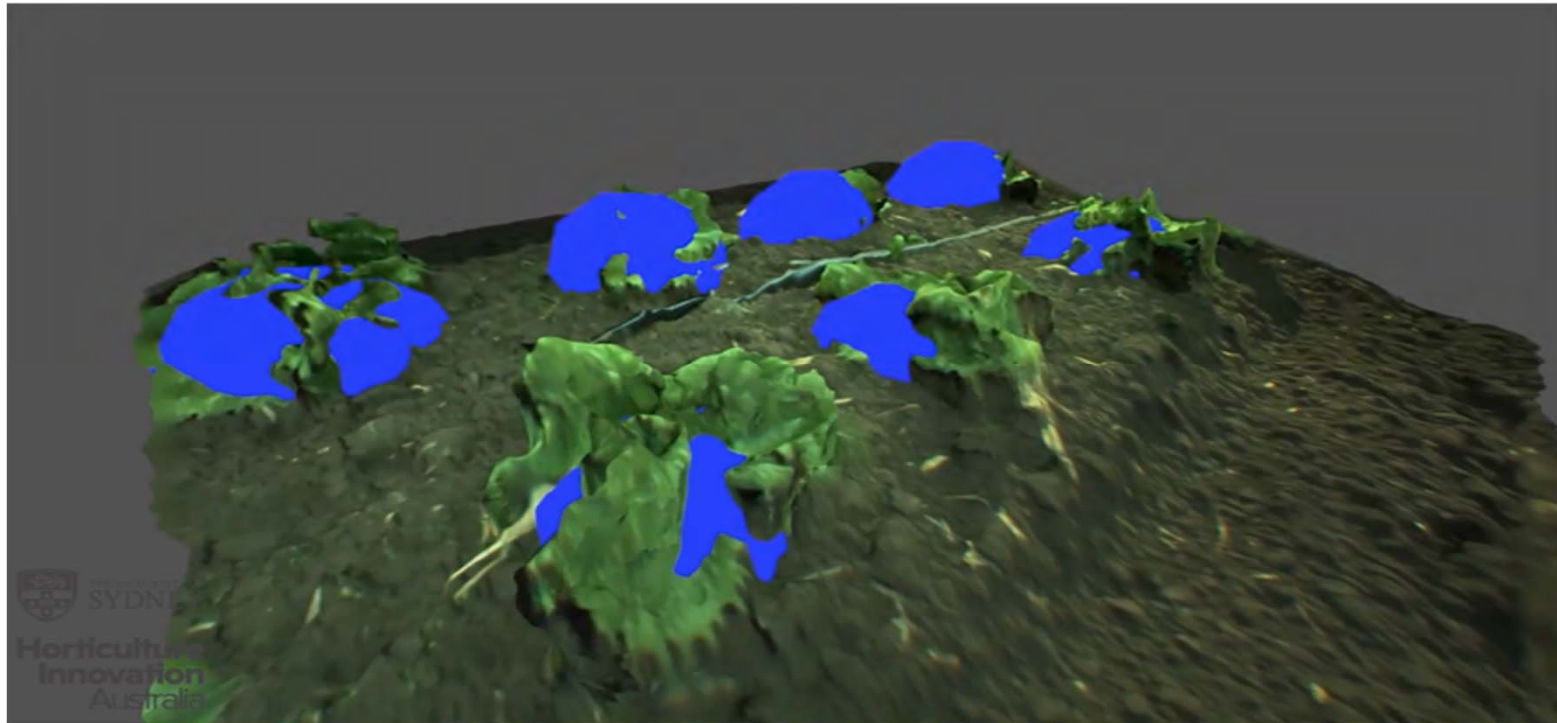


(d) complete system

Data Capture and Analysis

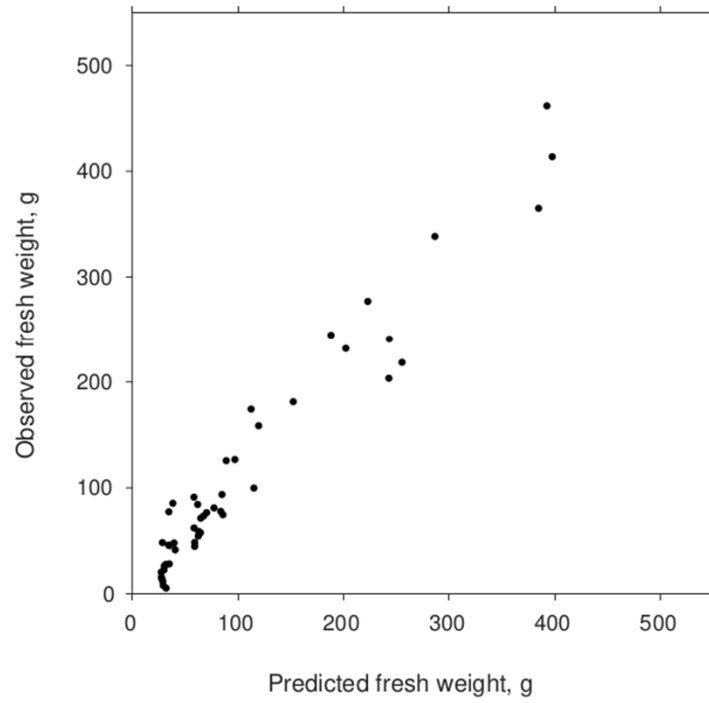


From detections to yield estimation

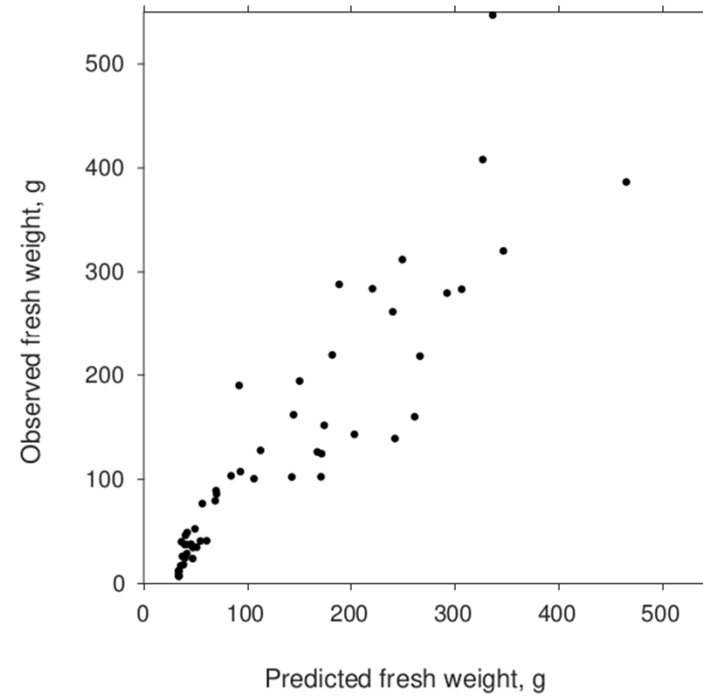


Yield estimation

Cos



Iceberg



RIPPA – Operational Prototype



- 15 on farm field trials (QLD, NSW, VIC, TAS)
- Second RIPPA Build
 - High torque motors
 - Mud scrappers
- Deep learning models for plant and weed detection on line

RIPPA



Autonomous robotics
Advanced sensing

Decision support systems

Sensors

Crop mapping

Crop intelligence

Crop interaction

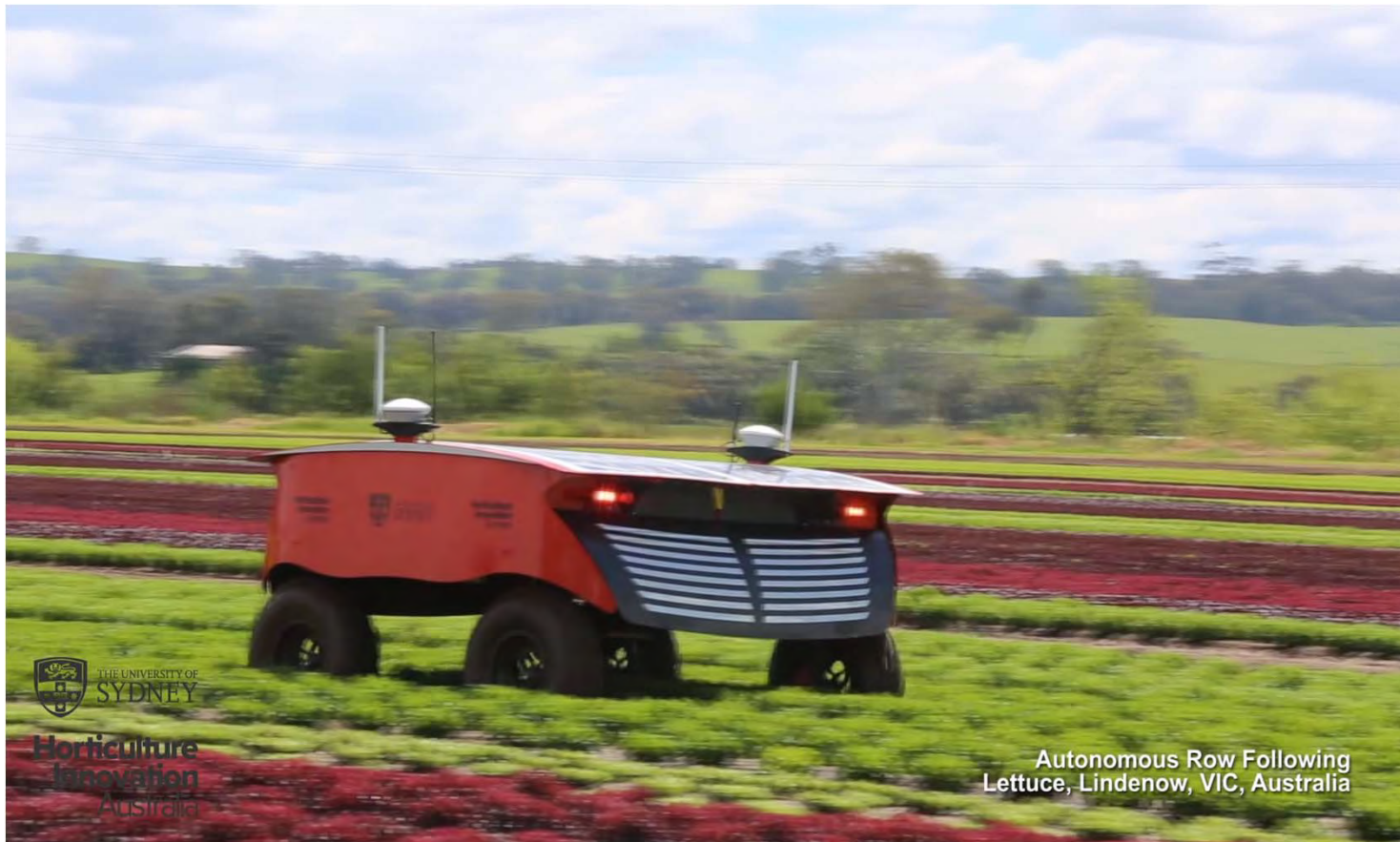
Precision herbicide application

Mechanical weeding

Foreign object removal

Variable rate spraying

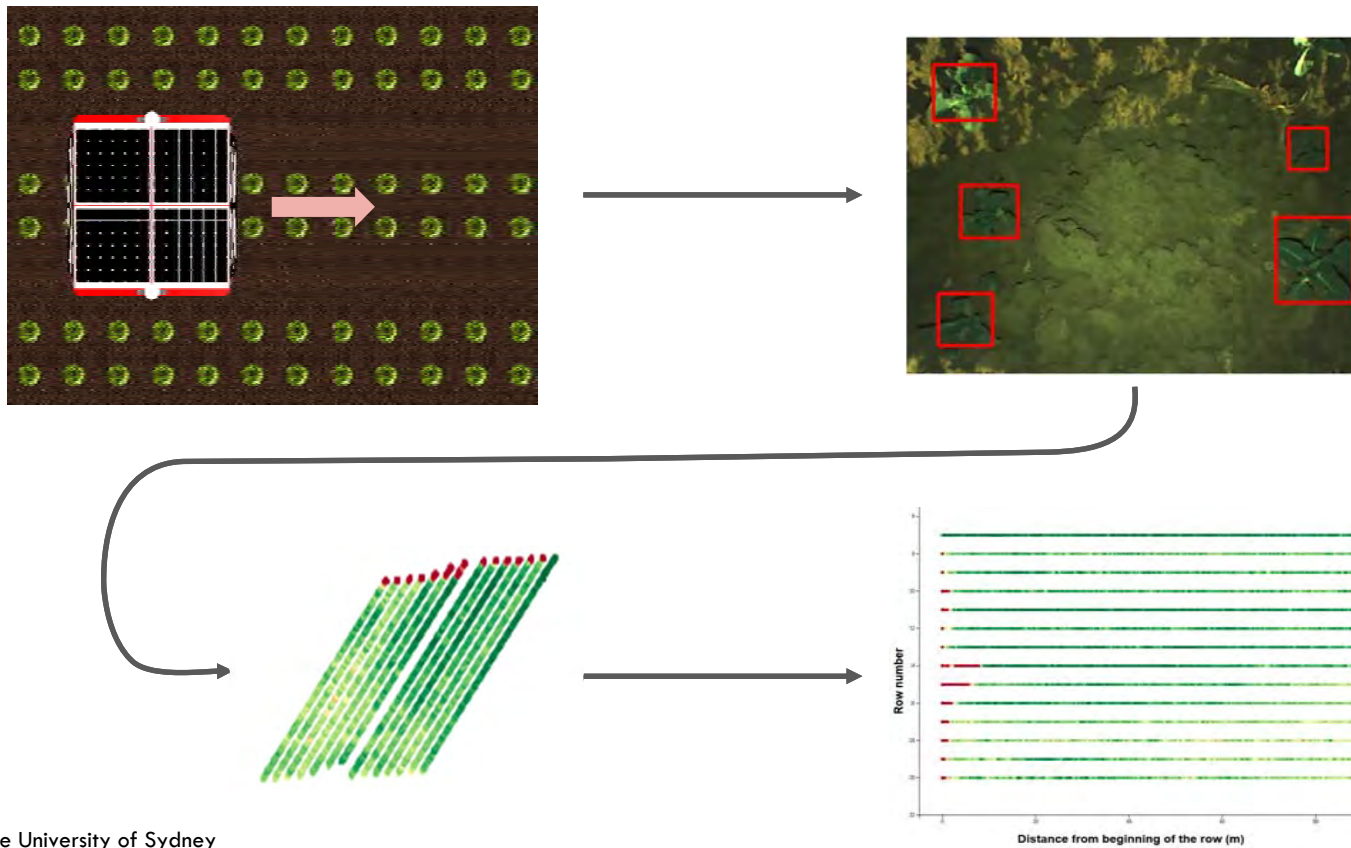
On Farm



Foreign Object Removal

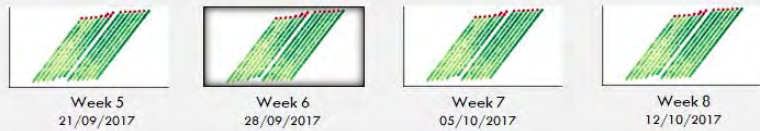


Crop mapping



Operational Crop and Soil Mapping

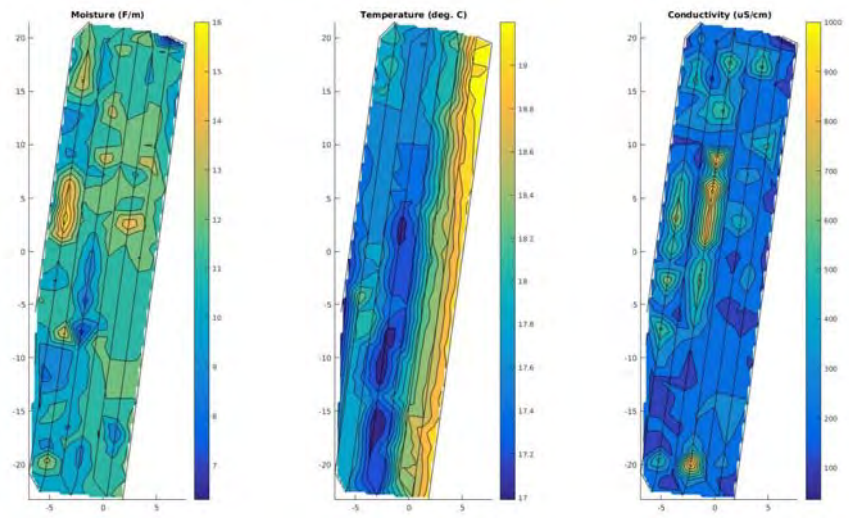
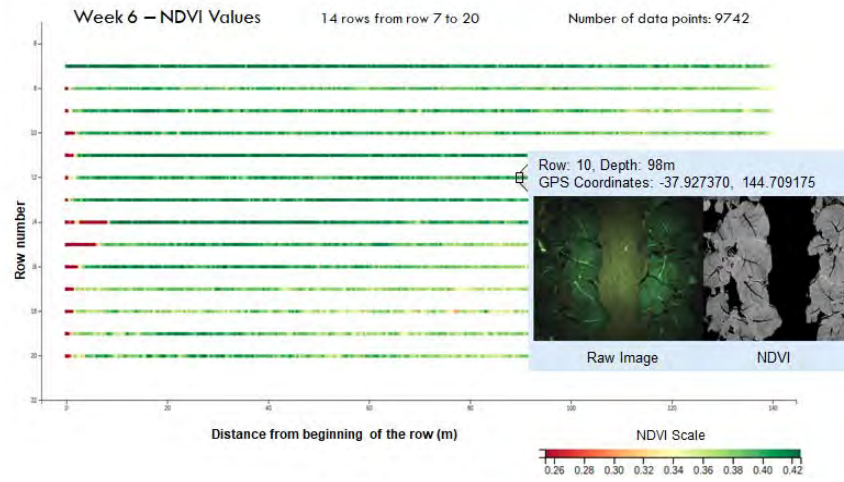
Farm: ACFR test
Mapped area: Paddock 5
 Rows: 14, Length: 145m



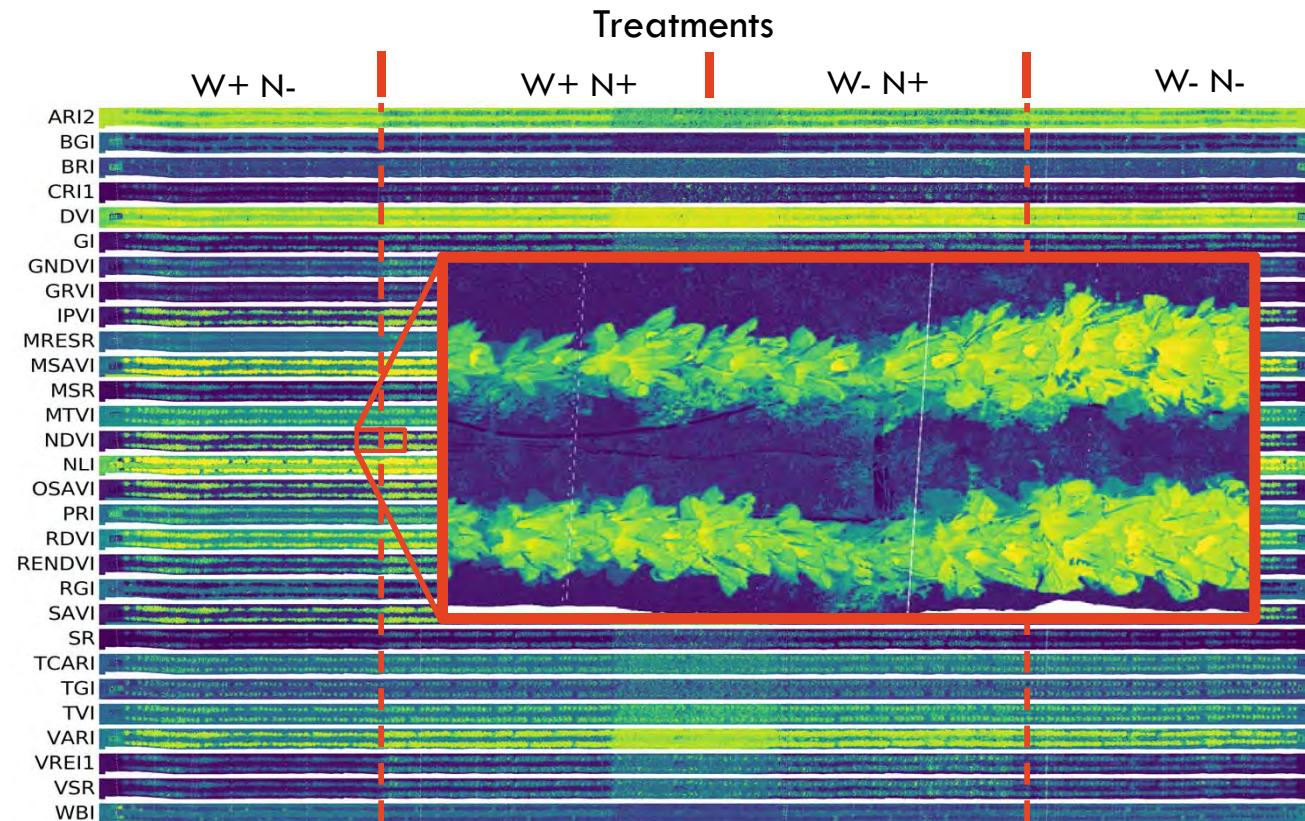
Crop metrics
 Crop: Broccoli
 Plants: 12154
 Avg Size: 164cm²
 Avg NDVI: 0.39

Weed metrics
 Weeds: 253
 Avg Size: 16cm²

Foreign Objects
 Objects: 23



Next: Growth Model to Fertiliser Need – Individualised



Next: Yield Prediction and Variability Reduction

Growth models

Fertiliser needs

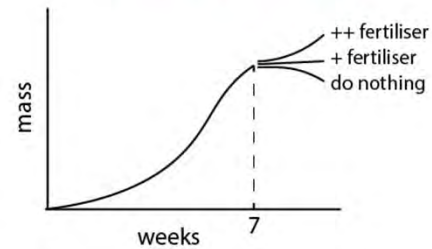
Bed 73
Row C
Plant # 482

Plant History



Yield Prediction

Week 7:
Bed 73
Row C
Plant # 482



TRL Status

	RIPPA	VIIPA	Weed Detect	Mech Weed	Soil Map	Yield and Variability Map	Foreign Object Detection and Remove	Health & Pest	Individual Automated Fertiliser Decision	???
TRL0 <ul style="list-style-type: none"> Idea: Unproven Concept 										
TRL1 <ul style="list-style-type: none"> Basic research: Principles postulated, no experimental proof 										
TRL2 <ul style="list-style-type: none"> Technology formulation Concept/Application has been formulated 							●	●		
TRL3 <ul style="list-style-type: none"> Applied research First laboratory tests completed 										
TRL4 <ul style="list-style-type: none"> Small scale prototype Full lab scale testing 										
TRL5 <ul style="list-style-type: none"> Large scale prototype Tested in intended environment 										
TRL6 <ul style="list-style-type: none"> Prototype system Tested in environment 						●	●			
TRL7 <ul style="list-style-type: none"> Demonstration system Operating in environment 	●	●	●	●	●	●	●			
TRL8 <ul style="list-style-type: none"> First-of-a-kind commercial system Manufacturing/Operational issues solved 										
TRL9 <ul style="list-style-type: none"> Full commercial application Technology available for consumers 										

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