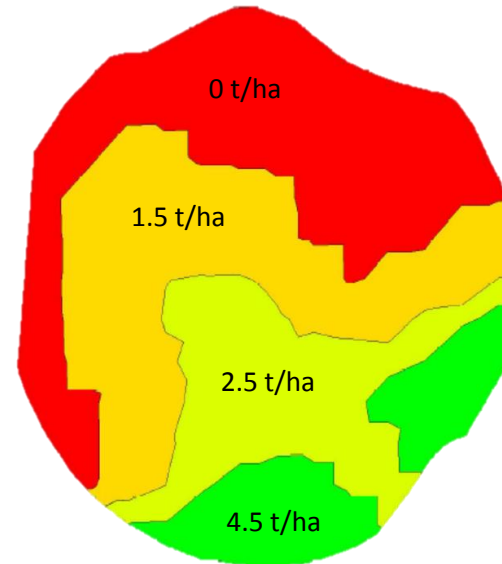




# Background

- Queensland DAF vegetable project through federal Innovation Grant 2014-2016
  - Assessing spatial variability
  - Yield monitoring: carrots, potatoes and sweet potatoes
  - Variable rate applications

Variable rate lime application



Conventional lime cost 60 t @ \$9,600  
VRT lime cost 35 t @ \$5,600 strategic spread

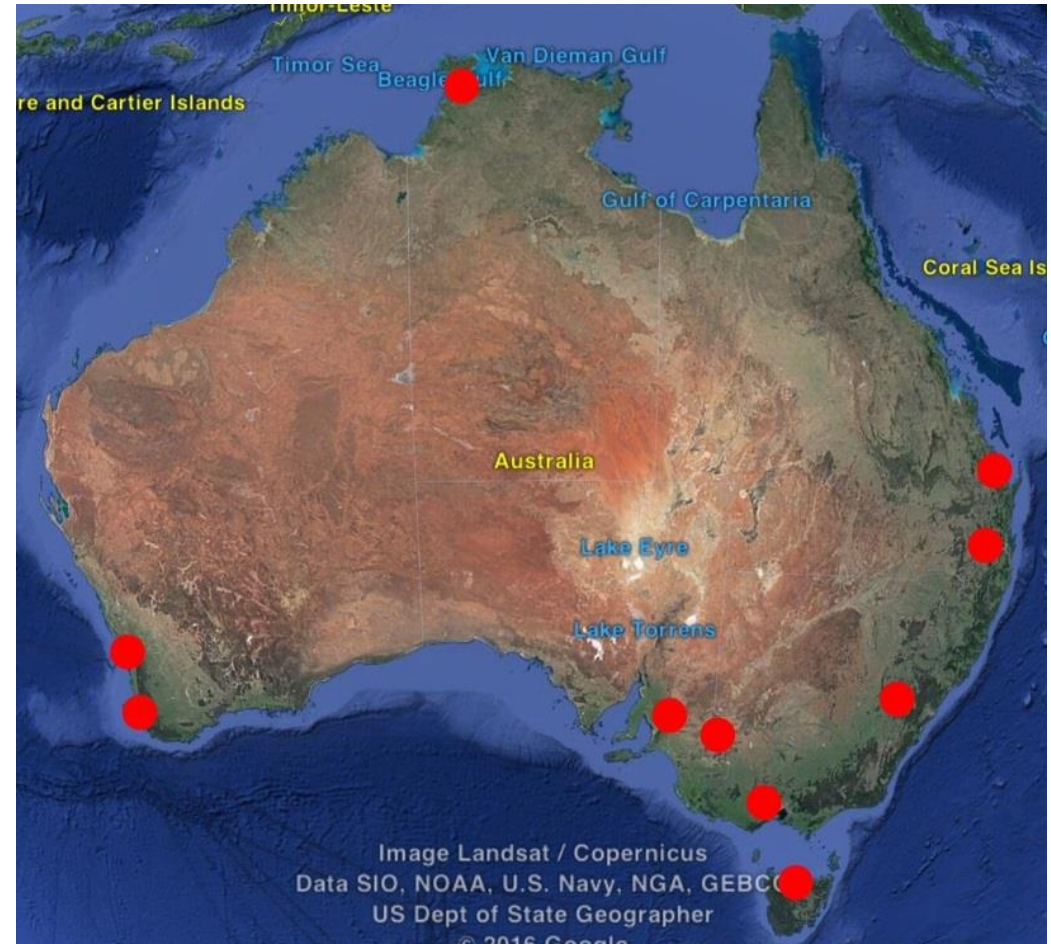
**40% lime savings**

# Project VG16009

- Commercially available precision ag technologies and practices
- How can these be applied to vegetable production to make management decisions?
- Installation, optimisation and groundtruthing
- Cost benefit analysis and return on investment

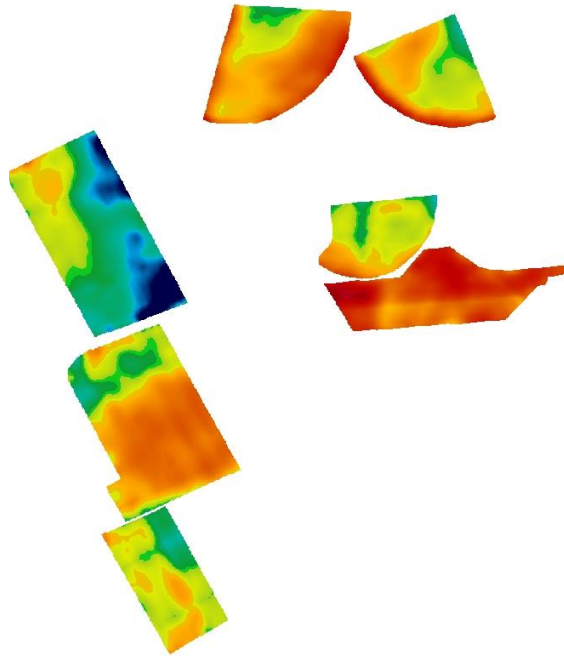
# Demonstration sites

- Farm action plans
- Assessment of variability - crop sensing imagery, EM38 soil mapping
- Groundtruthing activities
- Yield mapping and yield prediction
- Management options
- Cost benefit analysis

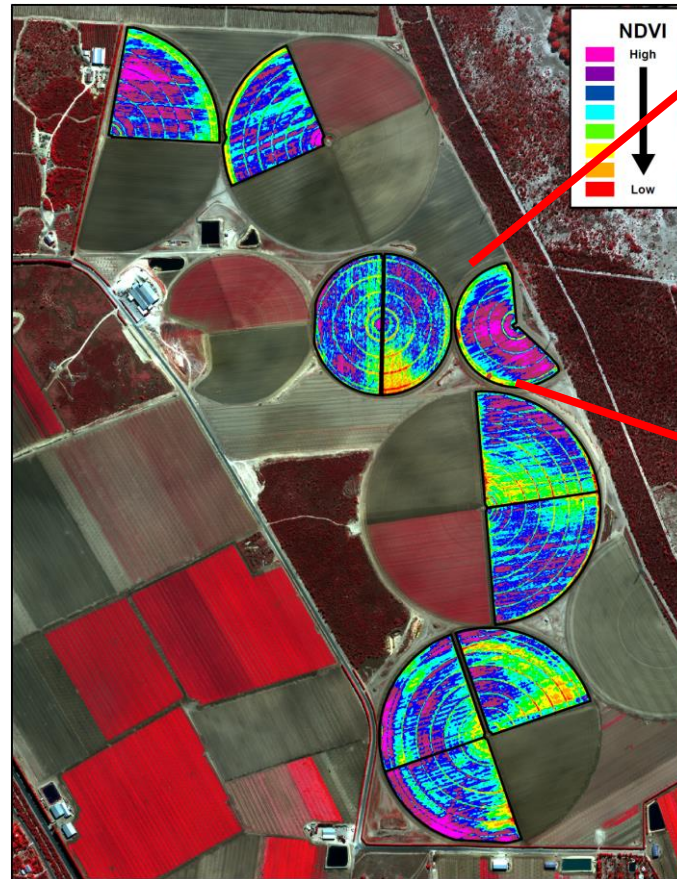




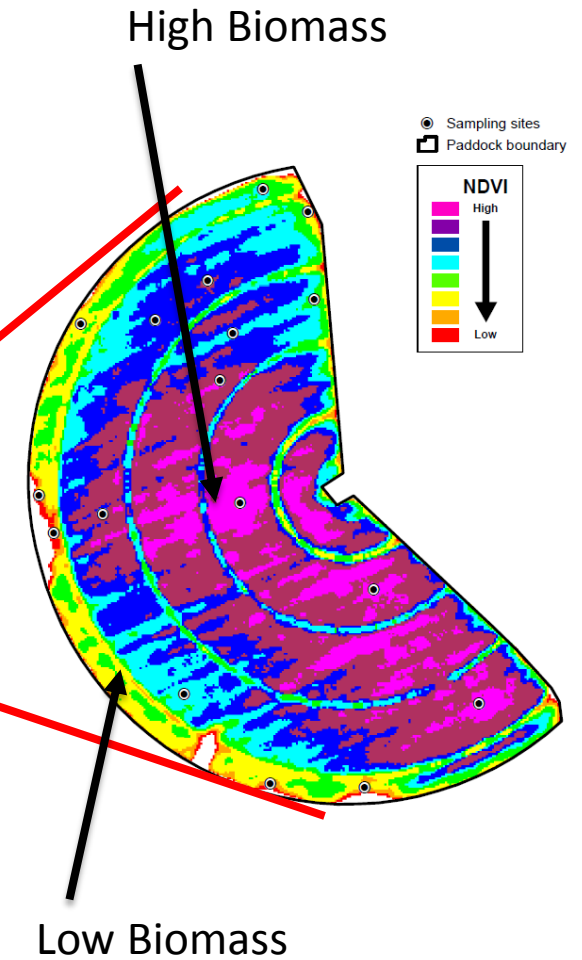
# Assessing spatial variability



EM38 soil mapping  
and/or Radiometrics



Crop sensing imagery





# Groundtruthing



GPS sampling points



Hyperspectral imagery



Soil sample

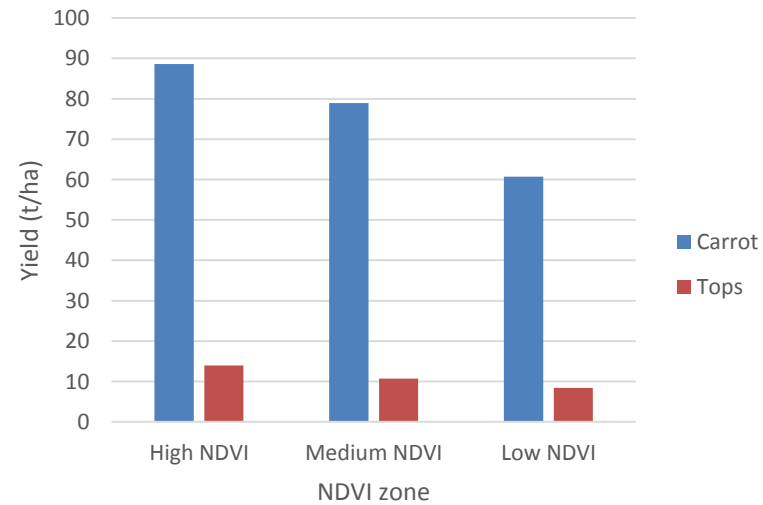
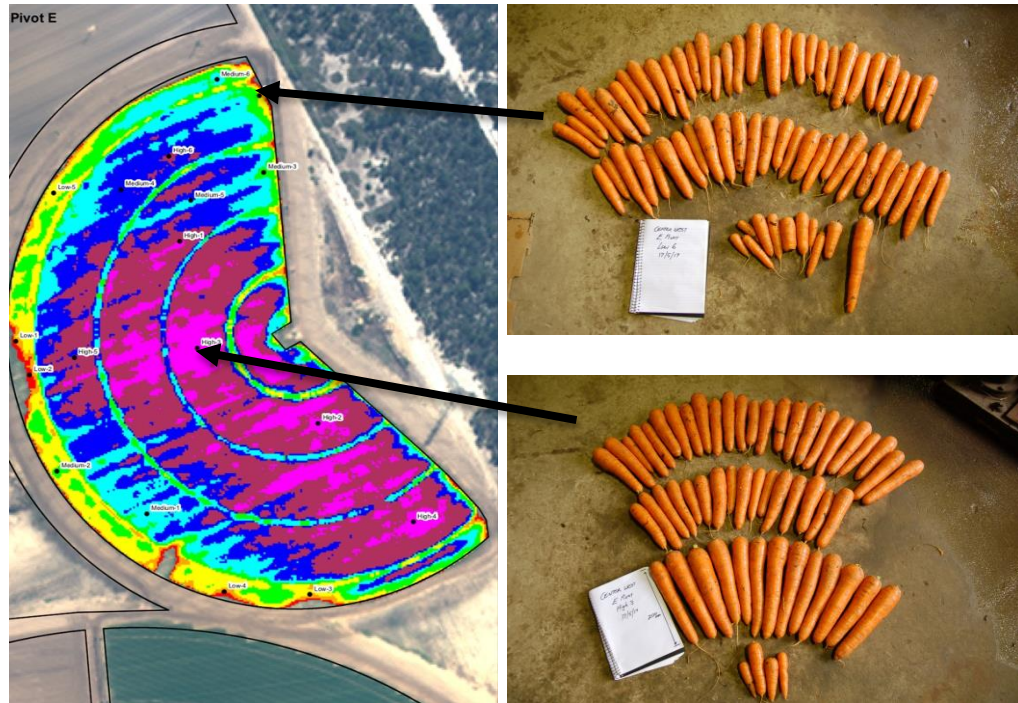


Yield assessments

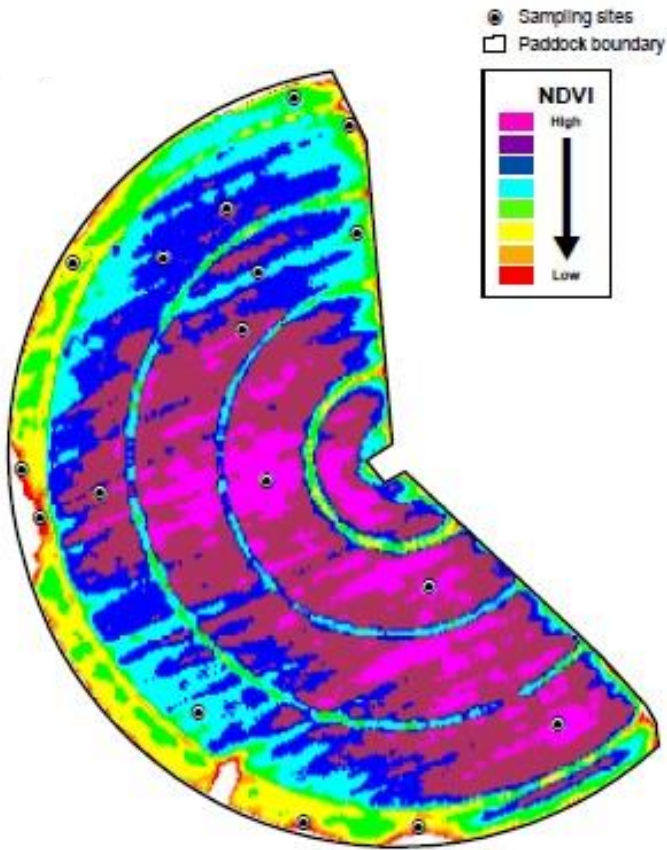


# Western Australia - carrots

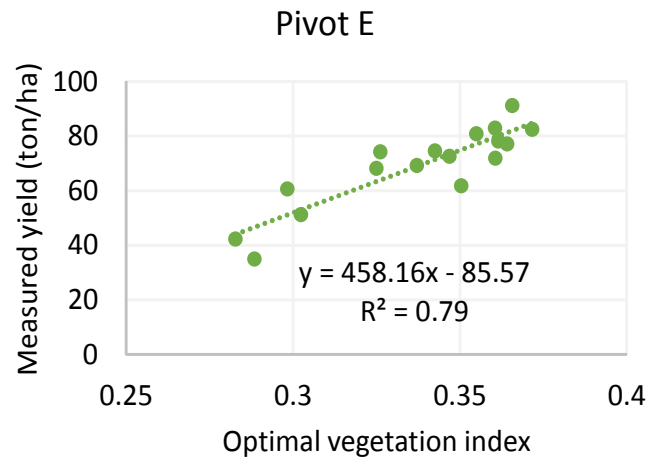
- Assessing spatial variability
- Yield monitor
- Potential for VRI



# Western Australia – Yield prediction

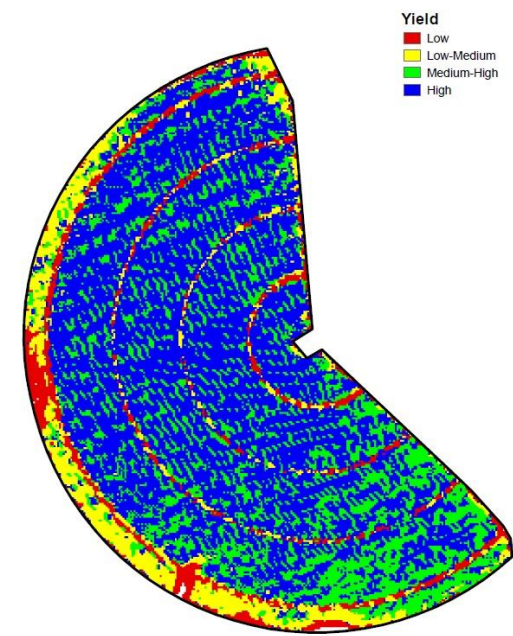


Vigour Map



**Yield forecast:  
63 ton/ha**

**Harvested yield:  
61.8 ton/ha**



Derived Yield Map

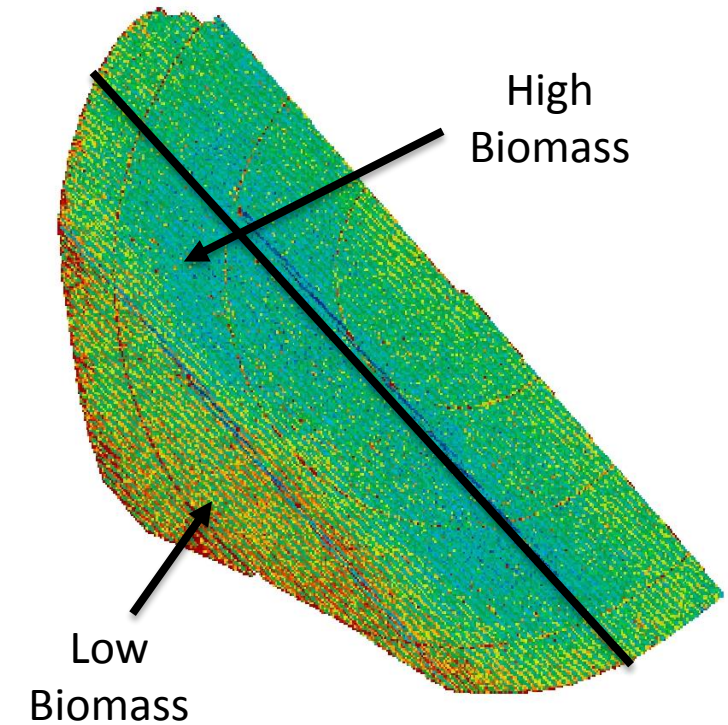
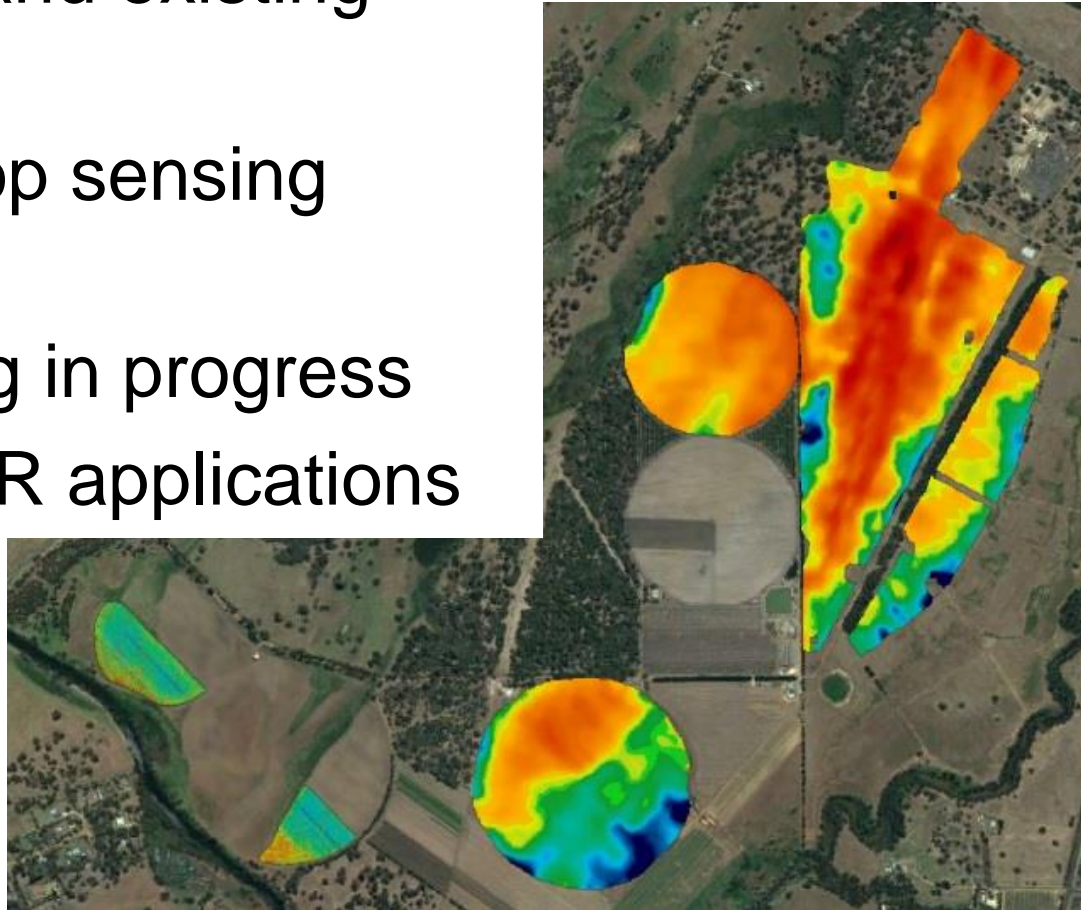
Yield Zone	Area		Predicted yield (ton/ha)	Total yield	
	(ha)	%		(ton)	%
Low	0.3	5%	30	9	2%
Low-medium	1.4	21%	53	73	17%
Medium-high	2.7	40%	64	172	40%
High	2.3	34%	74	172	40%

- Maximum forecasted yield: 499 tonnes (if the field achieved 74t/ha)
- Current estimated yield: 423 tonnes
- Estimated potential loss of production: 76 tonnes
- Estimated potential loss in productivity: 15%



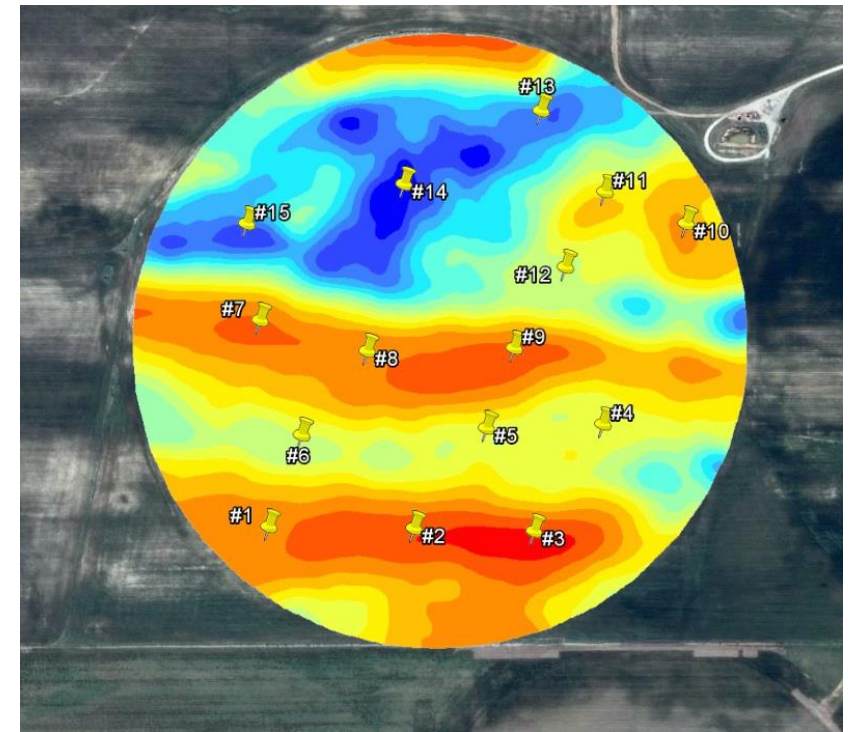
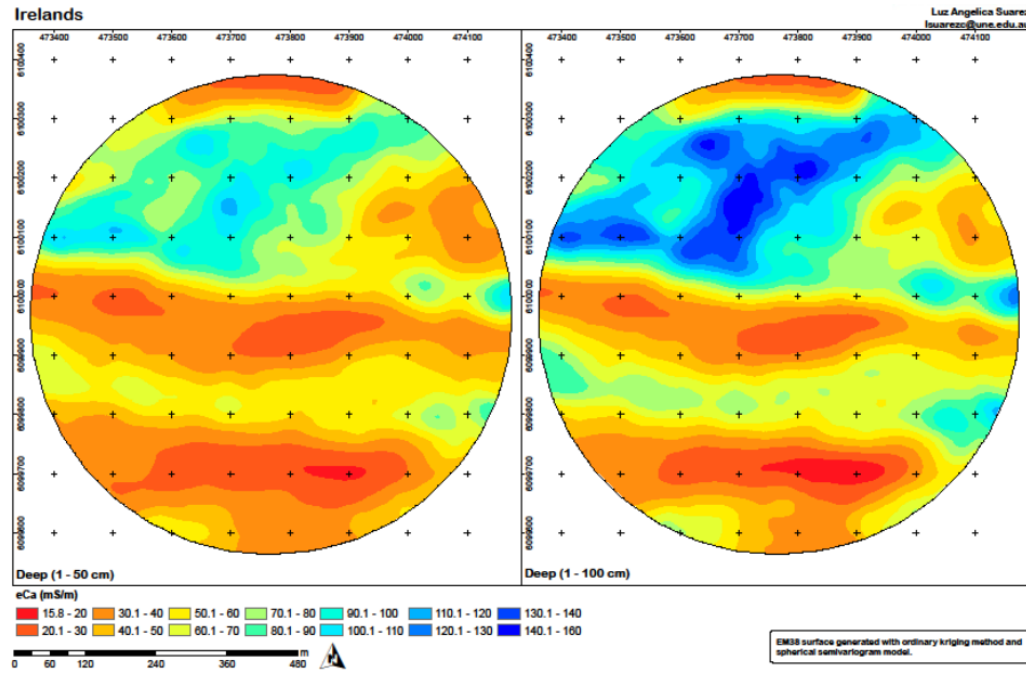
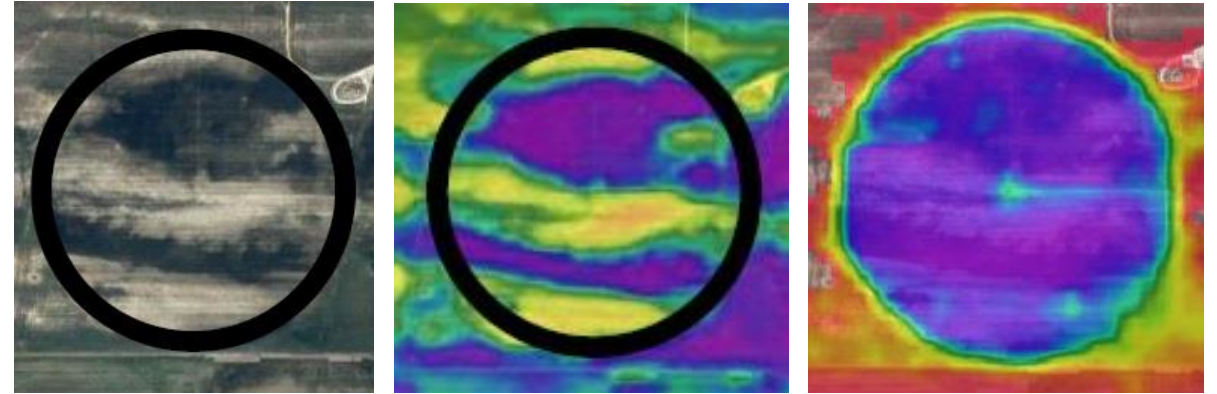
# Western Australia - brassicas

- EM38 Soil mapping of new development and existing pivots
- UAV/drone crop sensing imagery
- Groundtruthing in progress
- Potential for VR applications



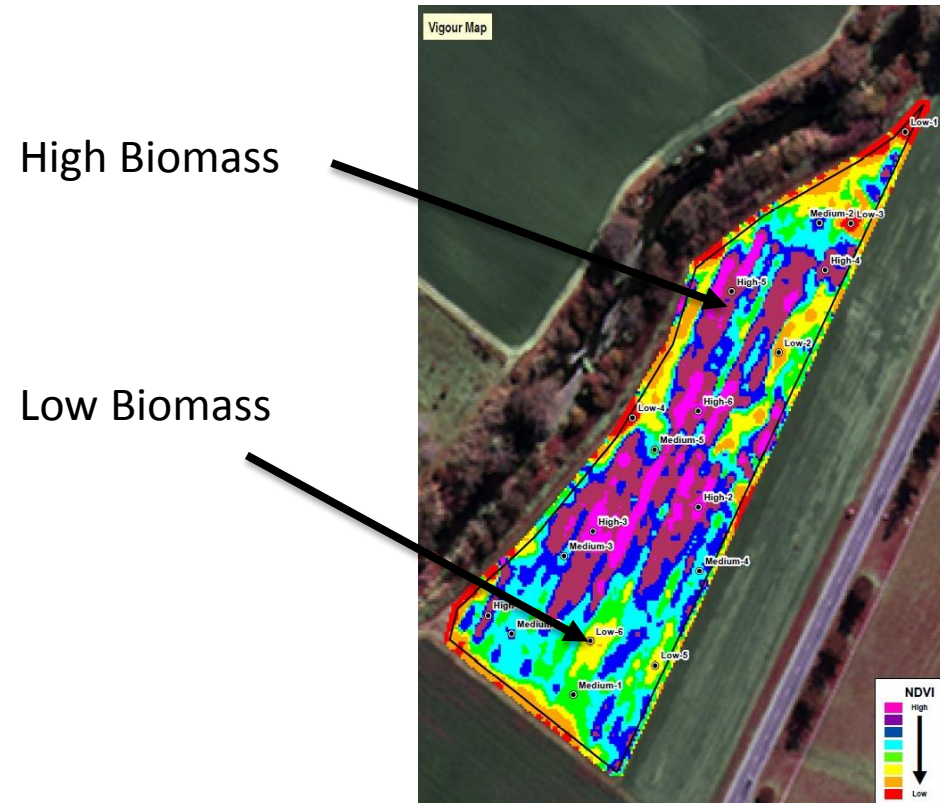
# South Australia - carrots

- Existing spatial data and VRI
- Groundtruthing EM38
  - Soil analysis in progress
- High res satellite imagery
- Yield monitor on carrot harvester
- Potential for VR applications

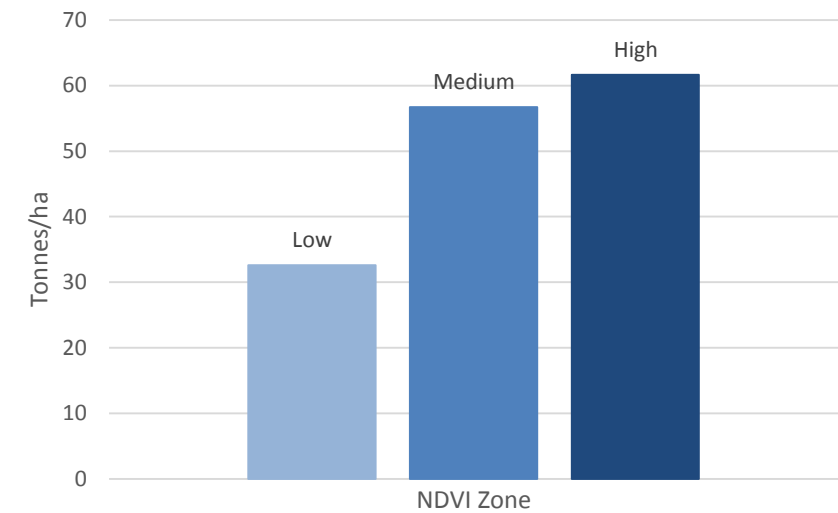




# South east Queensland- carrots



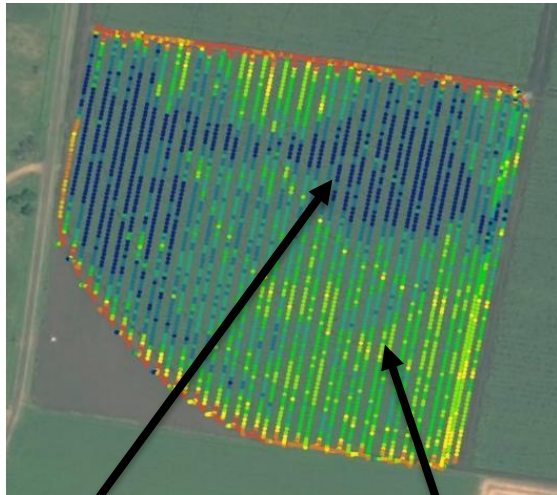
Low Medium High



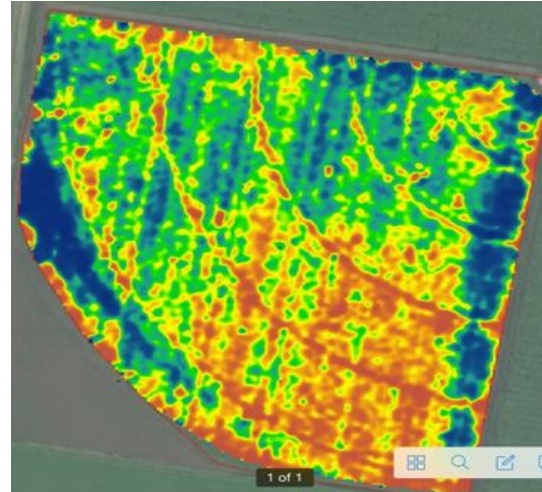
- Yield prediction and yield mapping
- Data analysis and interpretation
- VR applications

# South east Queensland

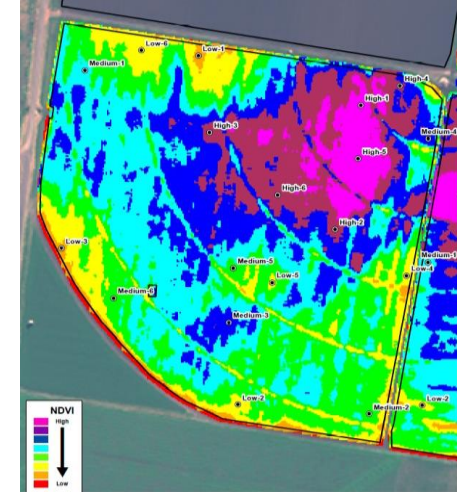
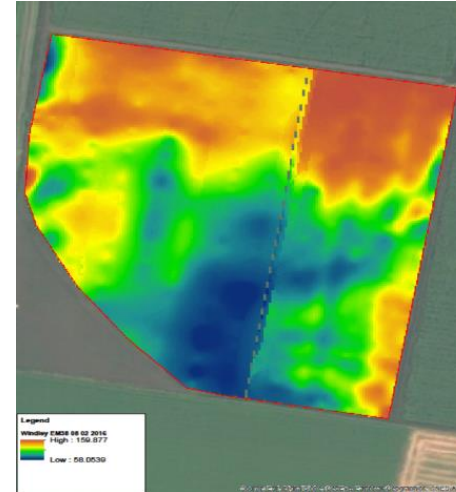
Greenseeker NDVI 2015



Yield map 2015



EM 38 soil map 2016 High res satellite imagery 2017



High Biomass      Low Biomass

- Long term data
- Temporal data
- Analysis of different spatial layers to help explain variability





# QUESTIONS?

For more information contact  
Julie O'Halloran  
0409 054 263

