

# Craige Mackenzie

Arable & Dairy Farmer



# Farming Businesses



## Greenvale Pastures Ltd

- 200 ha intensive cropping



## Three Springs Dairies Ltd

- 330 ha high output dairying



## Agri Optics New Zealand Ltd

- Precision Agriculture company



## Mackenzie Research Group Ltd

- Farming technology



# “Farming for the Future”

## We Believe:

- The Land is our Bank
- Attention to detail gives us an edge
- Costs need to be fully understood to ensure efficient use and profitable outcome
- It is essential to utilise the knowledge of others and take advantage of new technology



# Measure & Monitor



Data entry in the office

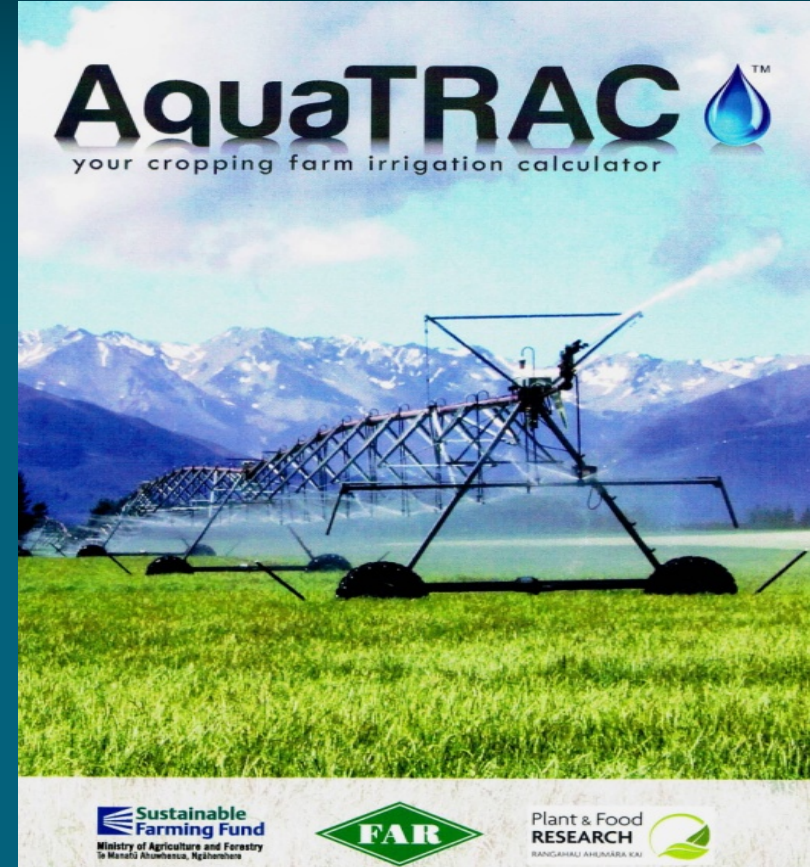


Recording in the field

# Managing Resources



Monitoring application rates



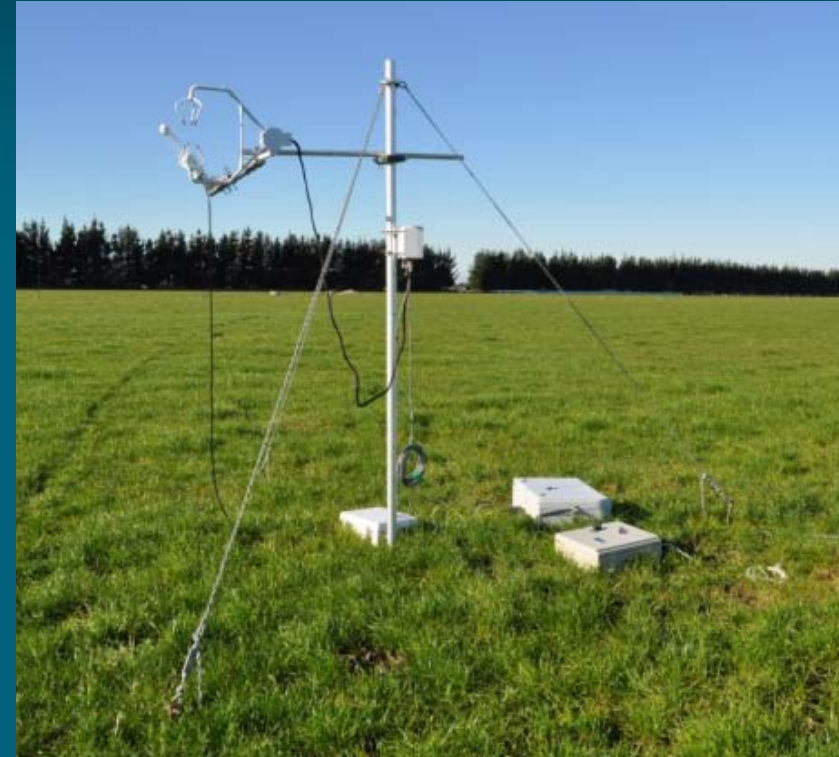
Using Decision Support Systems



# Increasing Skill Levels

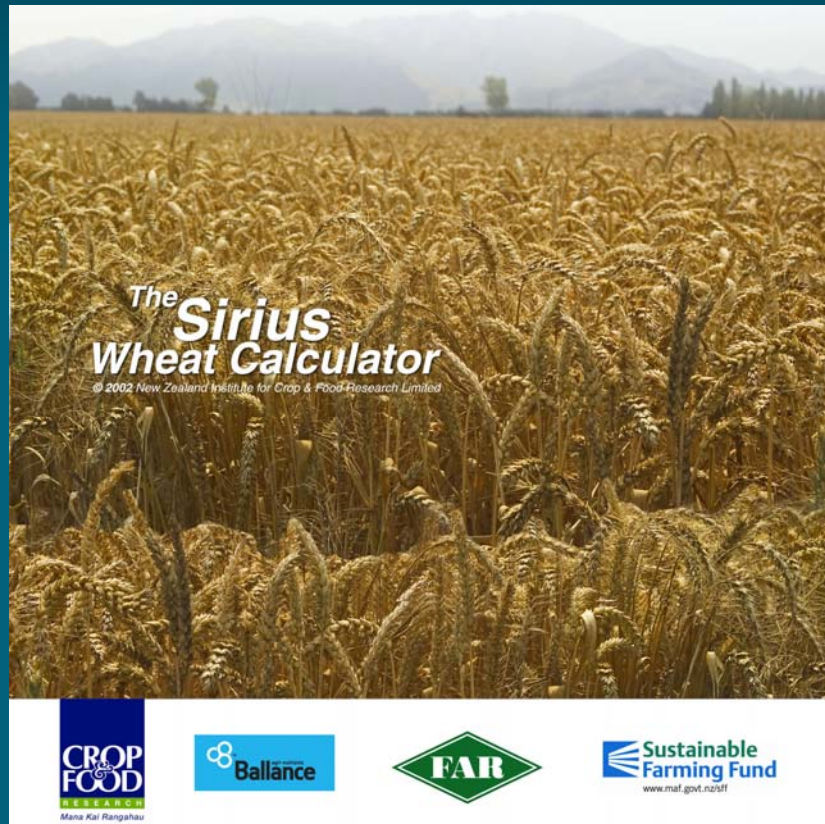


Precision Pasture Nutrient  
Management Group



Eddy Co-variance Tower  
-NIWA

# Managing Resources



Using Crop Calculators



Using GPS for soil testing  
and nutrient placement





NEW ZEALAND  
NUFFIELD  
FARMING  
SCHOLARSHIP  
TRUST

# Nuffield Scholarship



Grain Drying Facility - China



Precision Ag. necessity - UK



# “Farming for the Future”

*The right input,  
in the right amount,  
in the right place,  
at the right time,  
in the right manner.*



# Making it Pay with Mapping

- All farms have variability, some natural and some man-made.
- Not every area was paying its way.
- Mapping allows us to manage areas differently, ensuring every area is profitable



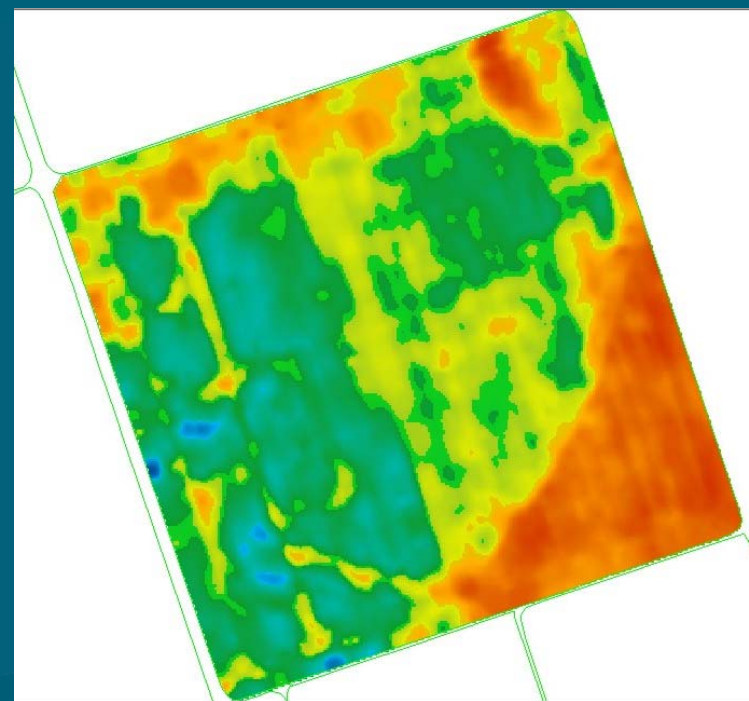
MAPPING

Courtesy of BILLIRWINARTS



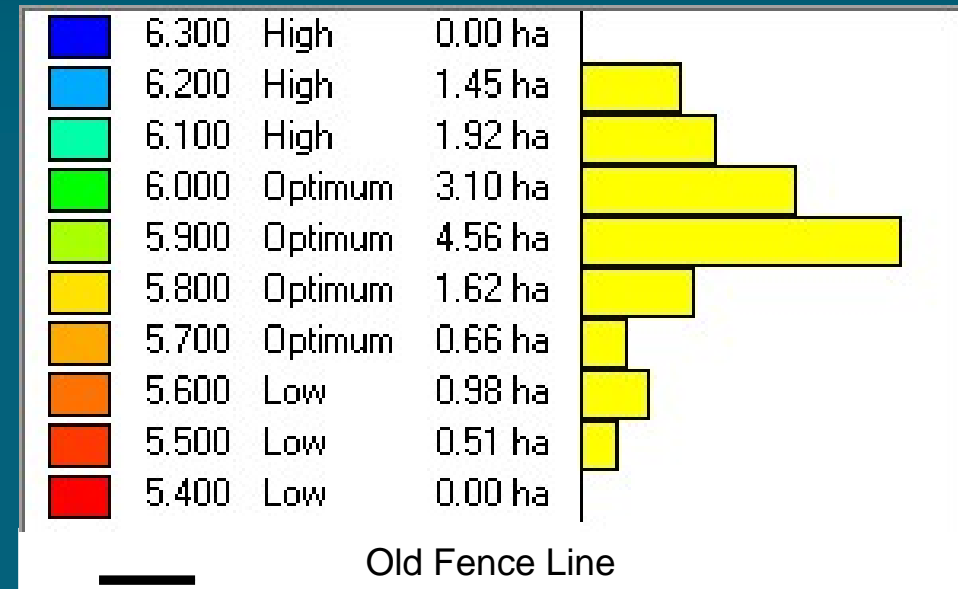
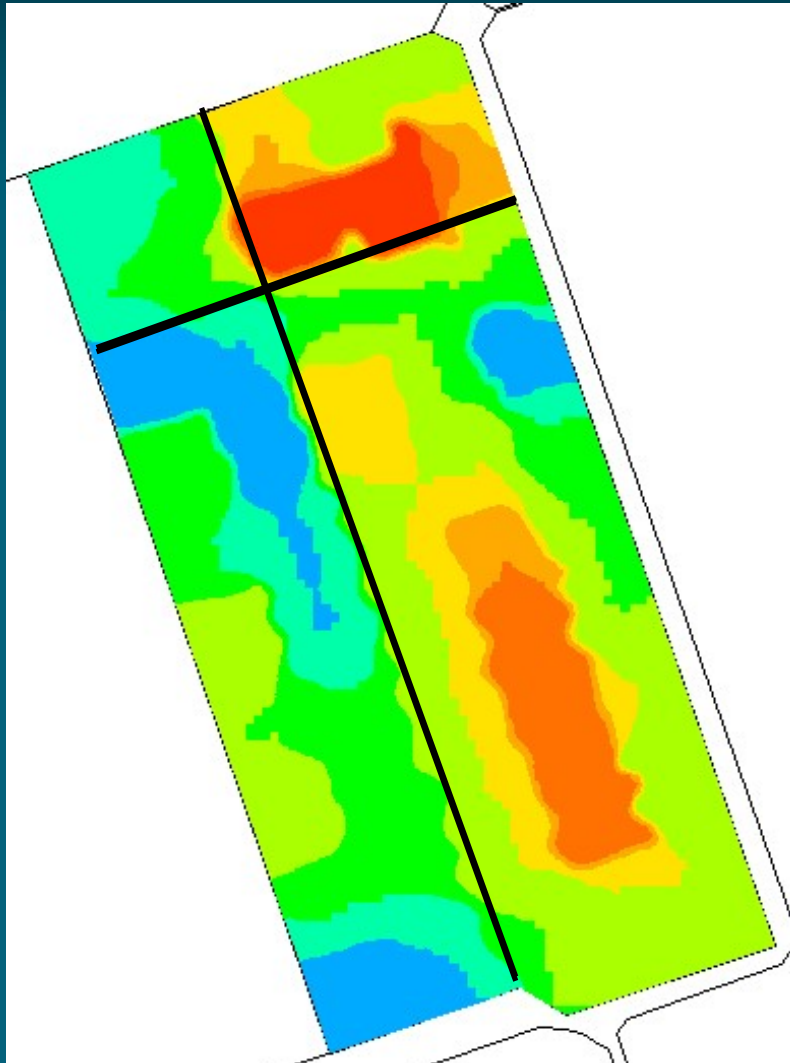


# Yield Mapping



Yield Map Paddock 15

# Zonal Management of pH



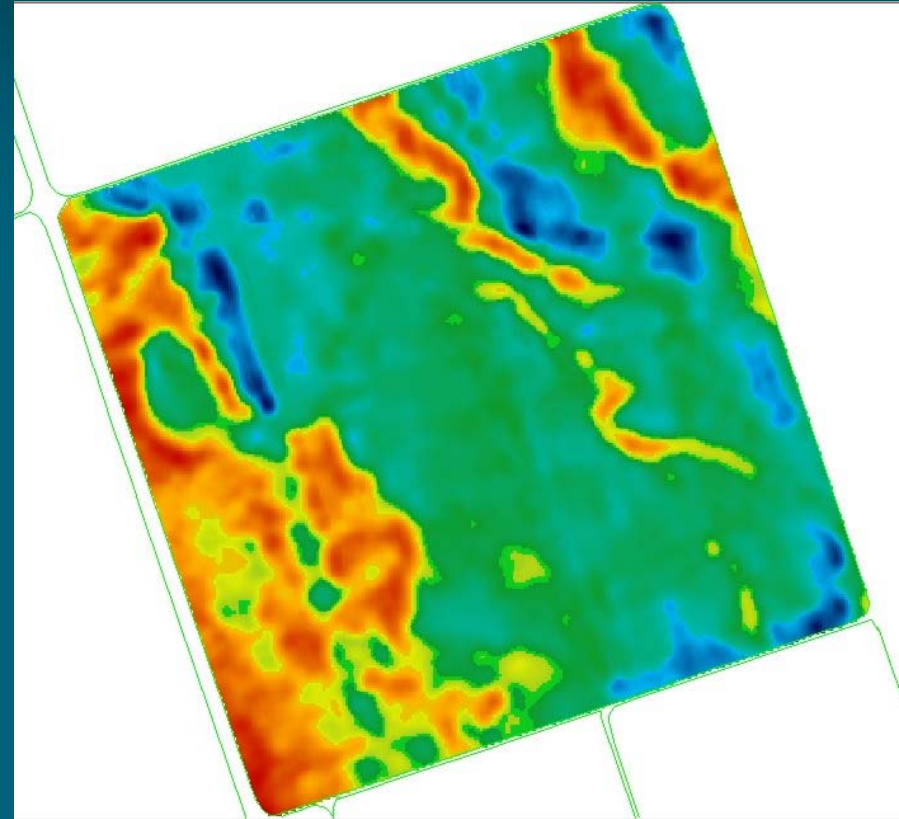
MAPPING



# Electro Magnetic (EM) Mapping

Indicates variability in

- Soil Texture
- Moisture Content
- Depth to Stone
- Clay Content



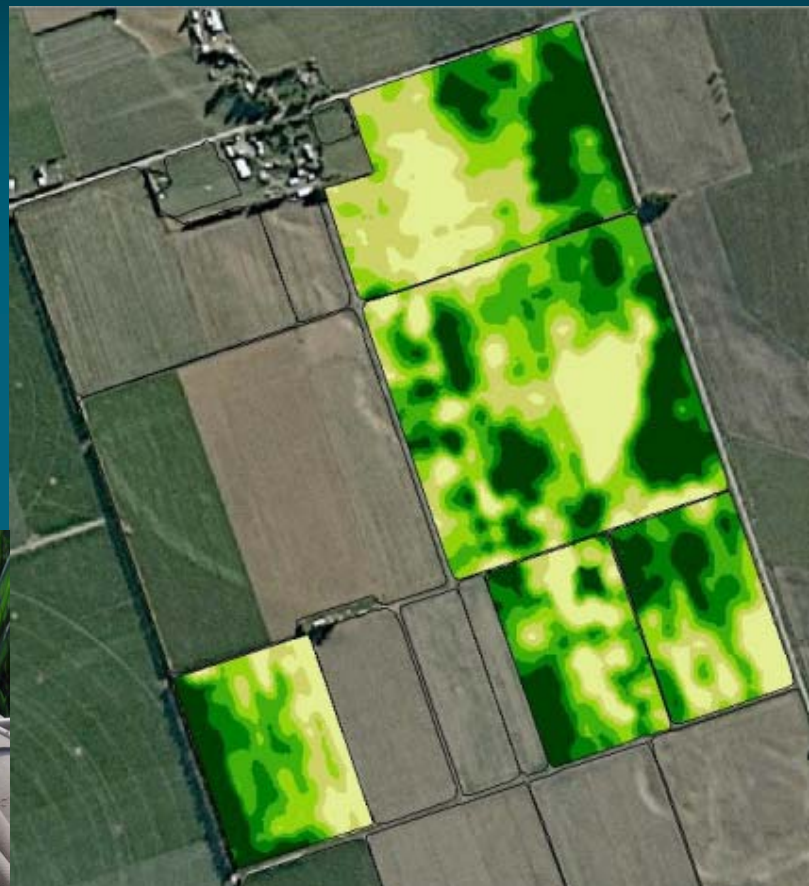
EM Map Paddock 15



# In-Crop Mapping with GreenSeeker



GreenSeeker Sensor



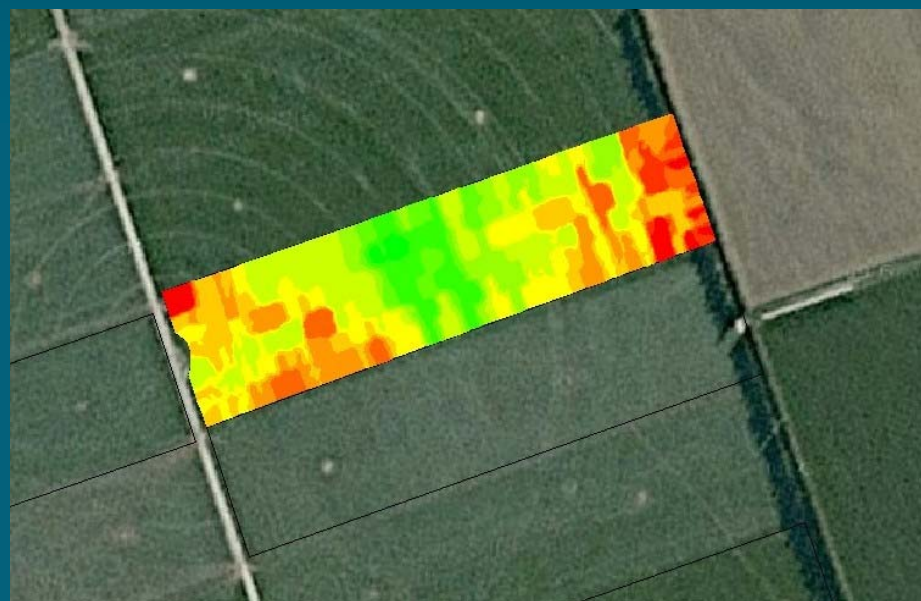
GreenSeeker Maps

MAPPING





# Pasture Mapping with GreenSeeker



GreenSeeker Map of Dairy Pasture

- Effluent spread underneath

# Prescription Maps for Variable Rate Application



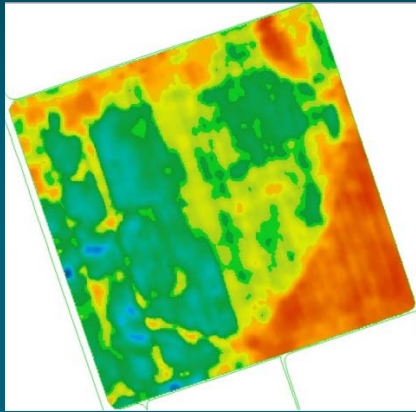
Variable rate application  
of fertiliser



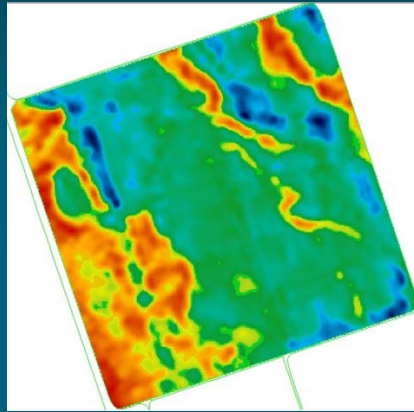
Variable rate seeding



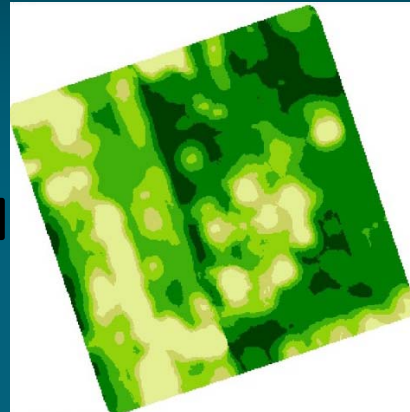
# Tying it All Together



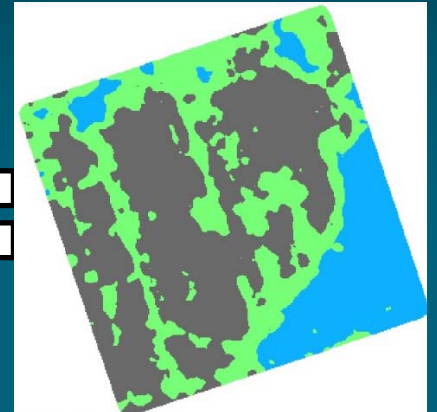
Yield Map 2008/09



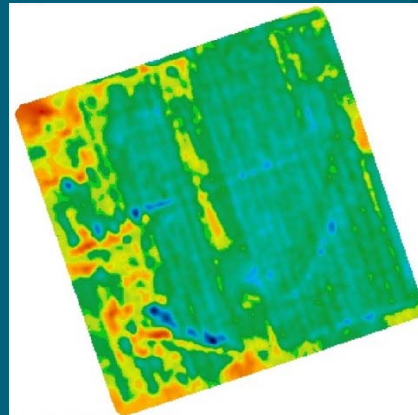
EM Map 2009



GreenSeeker Map 2009



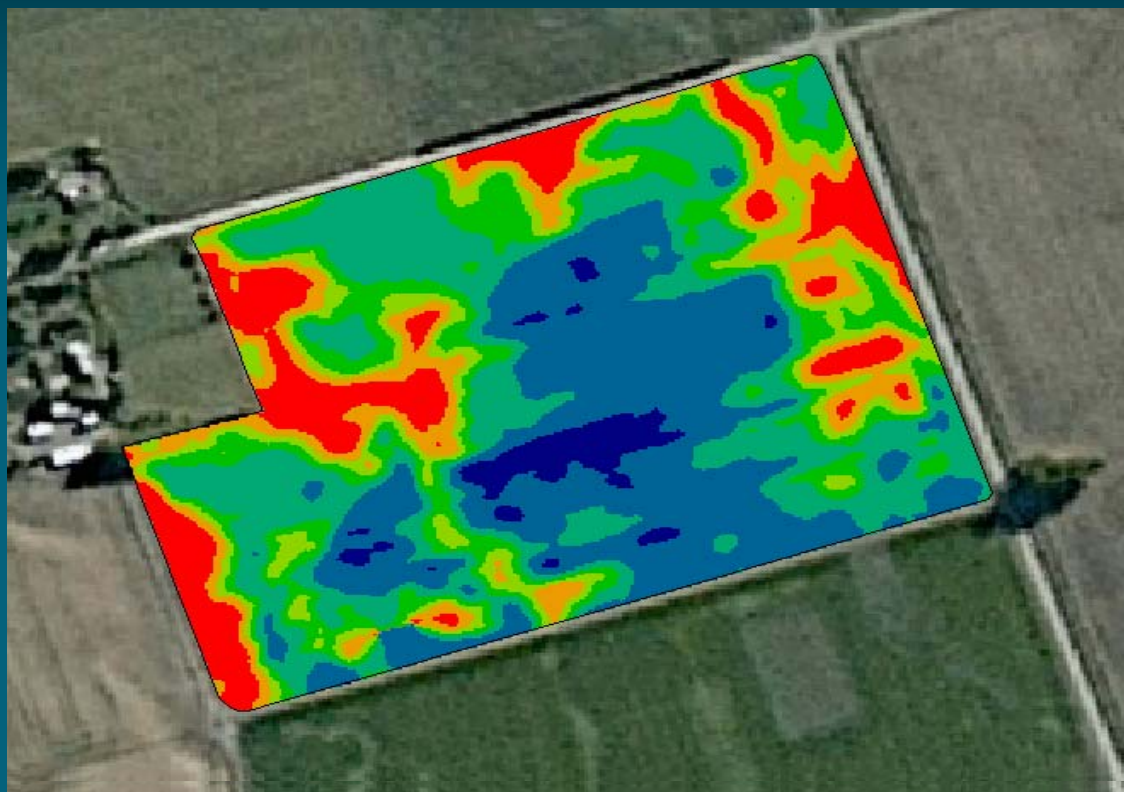
Prescription Map 2009



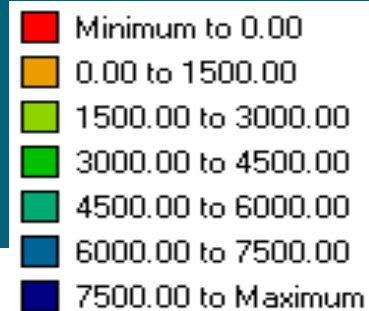
Yield Map 2009/2010



# Profit Mapping



Net Profit (\$/ha)



MAPPING



# Farmers helping Farmers

- System improving our bottom line and the environment
- Farmers maps being un-utilised
- Need for help with Data Management
- Company established in 2009
- Working with industry to improve capabilities





SMART-N

*The*  
**Smart-N**  
*Fertiliser Application System*





# The Smart-N

Fertiliser Application System

- Site-specific application of nitrogen or nitrification inhibitor (NI) .
- Up to 30% reduction of applied nitrogen without production loss.
- Reduces  $N_2O$  &  $NO^3$  emissions.



SMART-N



# FARMING FOR THE FUTURE



INNOVATION IS THE  
KEY