Precision Agriculture and it’s Benefits

Craige Mackenzie
Arable & Dairy Farmer
www.agrioptics.co.nz
Getting the Basics Right
Profit Mapping

Net Profit ($/ha)

- Minimum to 0.00
- 0.00 to 1500.00
- 1500.00 to 3000.00
- 3000.00 to 4500.00
- 4500.00 to 6000.00
- 6000.00 to 7500.00
- 7500.00 to Maximum

It's hard to be Green when you're in the Red
Getting Connected

We’re a Connected Farm

- 3G connection - farm office and machinery
- Wi-Fi connection - farm office and irrigators, soil moisture probes
- 3G connection - Irrigators, software server and cell-phones
- 3G connection - wells and irrigation auditor
- GPS on all irrigators, combine and tractors - all with auto-steer
- Lowra

Rural Connectivity is a huge issue for NZ development
Soil Testing: Combining Paddocks

- Lime
- Phosphorus
- Nitrogen

VARIABLE RATE APPLICATION:
- Application from traditional testing 75 tonnes
- Total application reduced to 10 tonnes
- Saving total $2,925. $195/ha
Matching Crop Requirements

- Know soil types, spatial variability
- Good crop rotations
- Set realistic yield goals
- Wheat requires 25kg/N/tonne grain produced, what does grass require?
- Understand different species benefits and their requirements
- Spatially soil test
## An opportunity in precision spreading

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<th>K</th>
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<td>In between</td>
<td>6.3</td>
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Pasture Mapping with GreenSeeker

- Mapping biomass differences
- High Nitrogen levels
- Potential savings with the use of crop sensors
Application & Exclusion Zones

• High nitrogen zone
• Gateway
• Water trough

VARIABLE RATE APPLICATION:

• Traditional application
  70 kg/ha Urea
• Average application rate reduced to 49 kg/ha Urea
• Saving 21 kg/ha Urea
  $19 /ha
Nutrient Budgets & Overseer®

Overseer Nutrient Budget

- Includes all nutrients e.g. fertiliser, effluent,
- Helps reduce fertiliser inputs
- Help access profitability
- Increased understanding of models for future use
- Our next step is ensuring that we were making best use of our fertiliser inputs.

http://www.overseer.org.nz

Trimble Juno for GPS location
The Value of EM Mapping in Overseer

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From the Ground Up

Farming starts with the soil

- Know your soil type
- Know your water-holding capacity (whc)
- Know your soil’s potential
- Understand your farm’s variability

Sustainability needs to be built in - not bolted on
Electromagnetic (EM) Mapping

- Different pattern to S-Map
- GIS site specific detail
- Accurate to individual farm
- Makes targeted management easier
- Useful going forward for informing Overseer inputs
Irrigation Management

• We’ve come a long way with technology, hardware and science. We use variable rate irrigation (VRI)

• Get an accurate understanding of the spatial variability of soils. We use data from EM Survey

• Understand the water holding capacity of each soil type to be irrigated

• Situate soil moisture probes by zone and water holding capacity
UAV’S with Sensors

Octocopter

Yamaha RMAX UAV Sprayer
Hyperspectral Imaging: Fenix Airborne Sensor
Paddock Scale Sensing
Agbot Robot
Where are my stock?

They were here this morning???

Meanwhile 2km down the road
Virtual Fencing
Virtual Fencing in Action
Climate Change
- how to reduce our footprint

- Measure/ Model/ Mitigate
- Reduce Emissions intensity
- Use irrigation wisely
- Good sustainable farming practices and the most profitable farming practices go hand in hand.

www.impressions.org
What does the Future look like?
What does the Future look like?

- Finger printing of our specialty products.
- Adding value to our products.
- Feeding an increasing wealthy market not just greater population.
- Retaining the right to farm.
- Paddock to plate tracking of products.
- Reduced inputs with greater value of output.
- Making our Farmers more profitable.
- Increased levels of sustainability both environmental and financial
- Focus on water quality as a showcase for the world.
"The best way to predict your future is to create it."
Abraham Lincoln