



# Spatial analysis of nitrogen strip trials in sugarcane

A method to match nitrogen rates to crop demand at the within-block scale to reduce nitrogen losses

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- Anthropogenic N losses to Great Barrier Reef too high
- Sugarcane N historically for yield (biomass) maximisation
- N rate a primary driver of N losses
- Sugarcane dominates GBR catchments (380,000 ha)



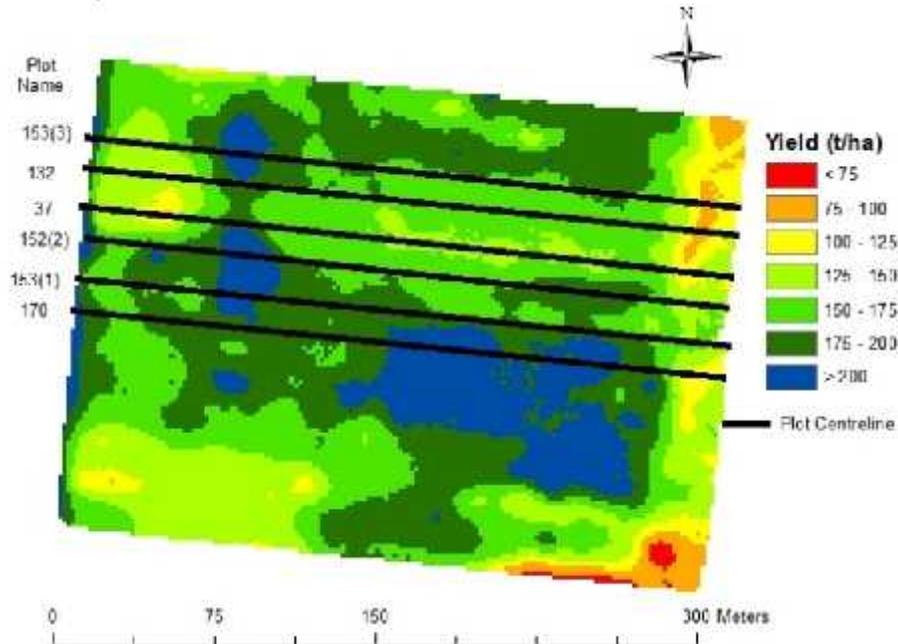
- Sugarcane yield highly variable at 'block' scale
- With uniform management, low yielding areas 'N loss hot spots'
- One way to reduce N losses is to target lower N applications to these N loss hot spots with Variable Rate Application



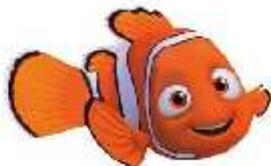
- Want a simile tool to inform VRA
- We implemented a trial with N strips of 37, 132 and 170 within farmers normal application of 153 kg N/ha
- At harvest we yield monitored, extracted yield values along strip centrelines, compared strips with normal application rate over 30 metres via *t*-test and 'rolled' this along the strip
- We did this to identify areas of significantly different yield



- We found areas where each strip was and wasn't significantly different to normal application
- Overlaying this information with the yield map was informative



- The rolling *t*-test added value to interpretation of yield map
- N 'limiting' strip appears of more value than N 'rich' strip



- This information could be used to inform VRA decisions
- Areas where N can be reduced are identified
- This could lead to N losses being lowered