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
• 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