

Milking the P's to Change – powerful **partnerships**, performing **Programs**, precision **Planning** and proven **Practices**.



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Practical Solutions for Natural Resource Management



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Partnerships

Cane Growers – Mill Areas – Bundaberg, Isis, and Maryborough;

Dairy - QDO

Grazing – Burnett Catchment Care Association,

Horticulture - Growcom



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Advisory and assessment panel membership:

1. Independent growers /producers;
2. DEEDI;
3. Agforce;
4. Catchment care groups – BCCA, MRCCC ;
5. Wetlandcare Australia and consultants.
6. Bundaberg Fruit Vegetable Growers



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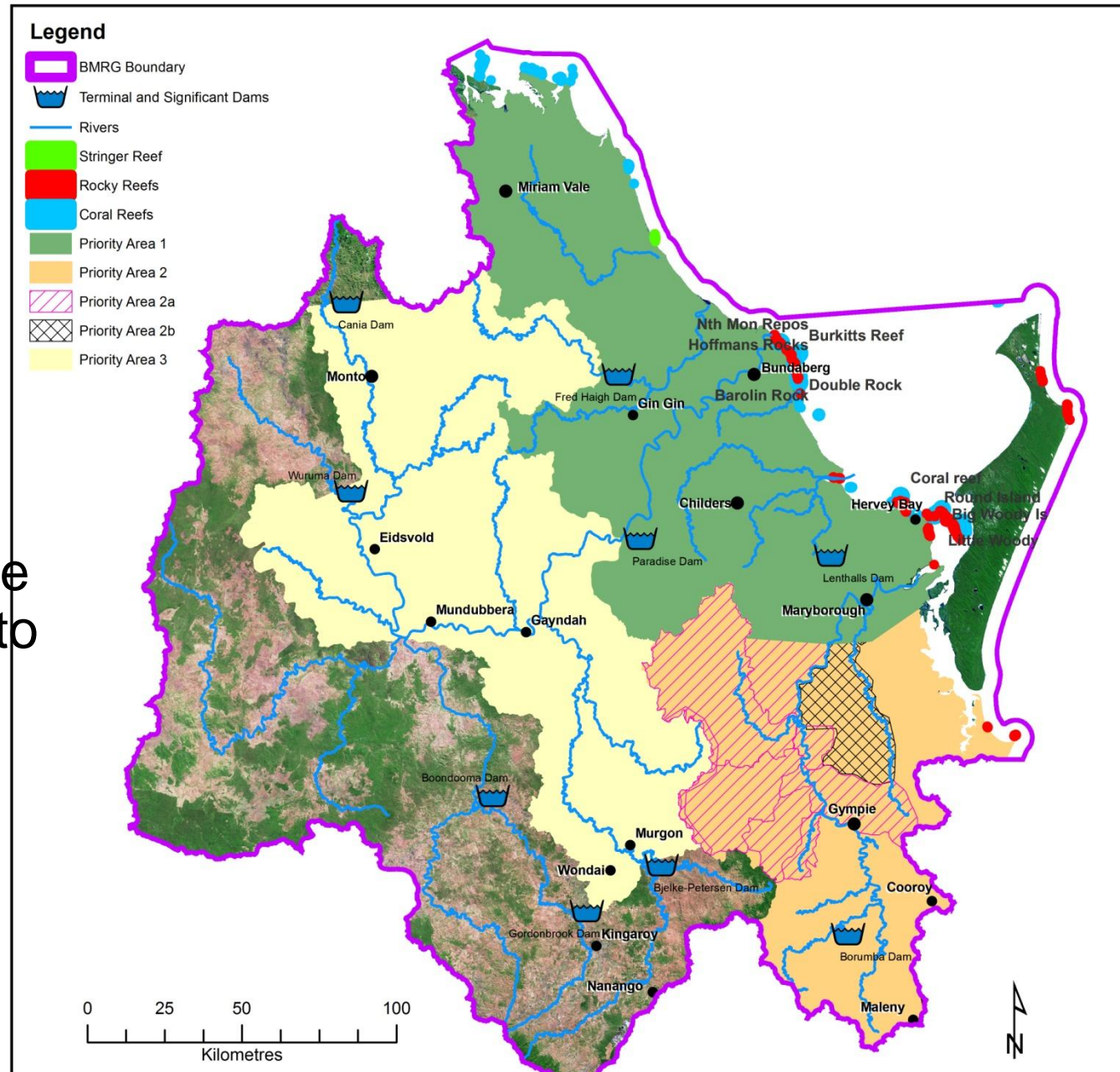
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Planned priorities

- On Shore Reefs
- Significant Seagrass areas
- All off shore currents migrate to the North and into the Reef Lagoon



Precision sub-surface compost incorporation



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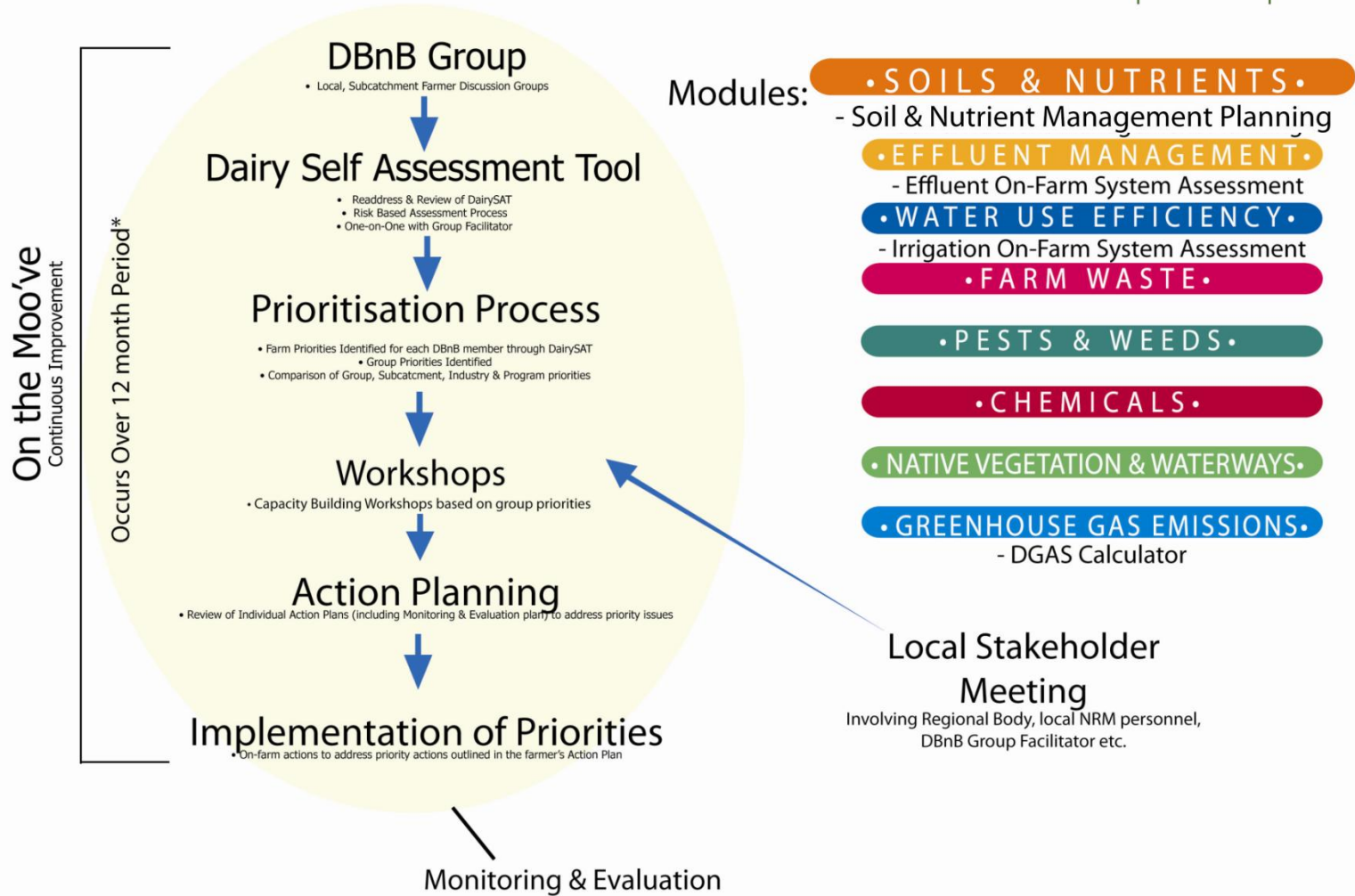
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The Dairy Program

Dairying Better 'n Better for Tomorrow
"Profit and Environment"





Soil & Nutrient Management Plans

- **Whole farm system approach**
- **More precise** and efficient fertiliser and nutrient use
- Improve farmer's understanding of soil and nutrients
- Recycling valuable nutrients otherwise wasted
- Minimised leaching and loss of nutrients
- High risk areas and practices identified and targeted
- Farmers develop and implement actions to improve farm practices and water quality



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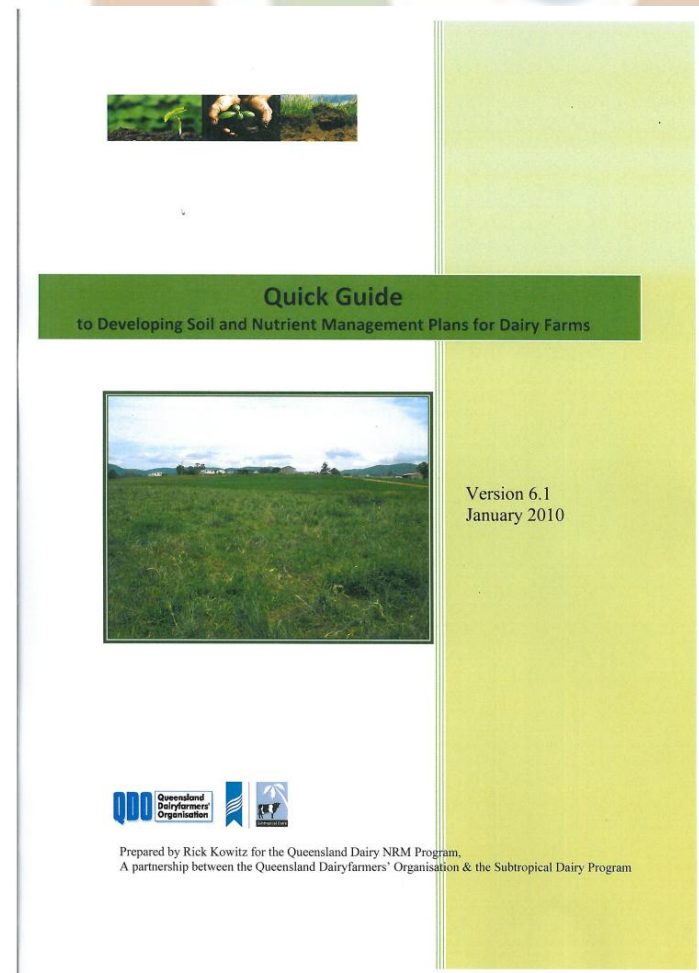
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A consistent approach - The “Quick Guide”

- A guide developed by the dairy program for service providers
- Explains the soil & nutrient management planning logic

Identifies

- Steps
- Processes
- “What if” considerations
- Decision support tools
- Plan outputs



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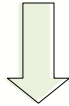
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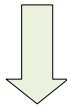
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Planning Logic

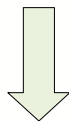
1. Determine appropriate Farm Management Zones



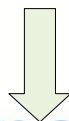
2. Farmer sets production goals for each Farm Management Zone



3. Take soil tests, check soil health & identify soil constraints in each zone



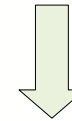
4. Determine soil nutrient & additive requirements to meet production goals



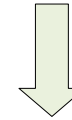
5. Check the risk of nutrient loss & reduce excessive nutrients in high risk zones



6. Customise fertiliser blends to address limiting nutrients. Use effluent, manure and other on-farm nutrients first



7. Customise fertiliser types, rates, timing & placement to minimise nutrient loss



8. Monitor production in each zone & review soil & nutrient plans annually

Plan Contents

Farm Goals

Planning Logic

Property Description

Farm Soils & Layout

Infrastructure & Current Management

Making the Most of Farm Nutrients

Risk of Nutrient Loss

Farm Management Zones

Recommendations

Keeping Farm Records &

Reviewing the Plan



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Dairy Farm Case Study

Baffle Creek Dairy Farm

Background

- Family operation
- 132 ha
- 170 cows
- Loam to sandy loam soils
- 1-10% slopes
- 340 ML Irrigation allocation
- Active in *Dairying Better 'n Better for Tomorrow* program



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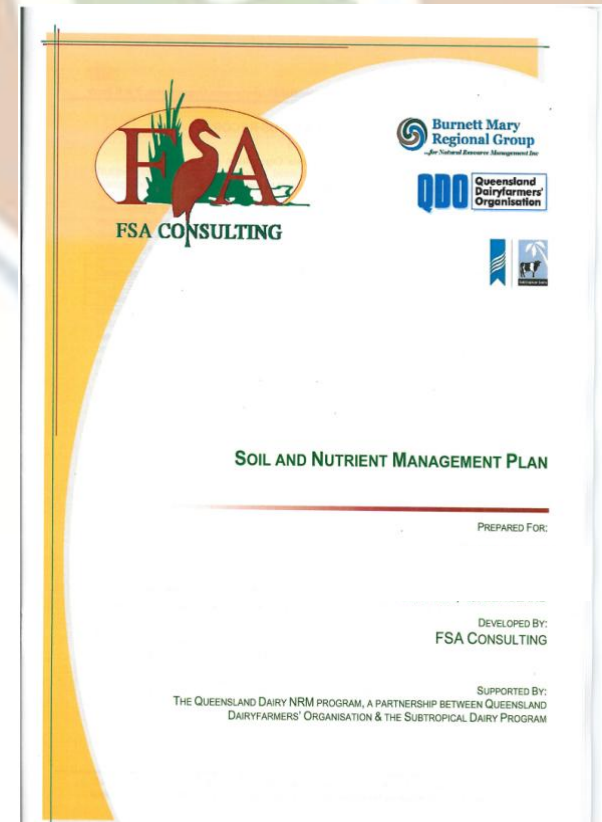
Previous Management

- Creek fenced from stock access
- Pastures and ground cover well maintained
- Gravelled laneways
- Effluent well managed
- High fertiliser inputs



How was the plan prepared?

- Farm data collected
- Property map prepared
- Farm visit by the FSA consulting
- Paddocks assessed, soils sampled, Farm Management Zones identified
- Information was analysed by FSA
- Risk of Nutrient Loss was assessed
- Recommendations were made for each Farm Management Zone
- Plan was prepared and discussed with the farmer



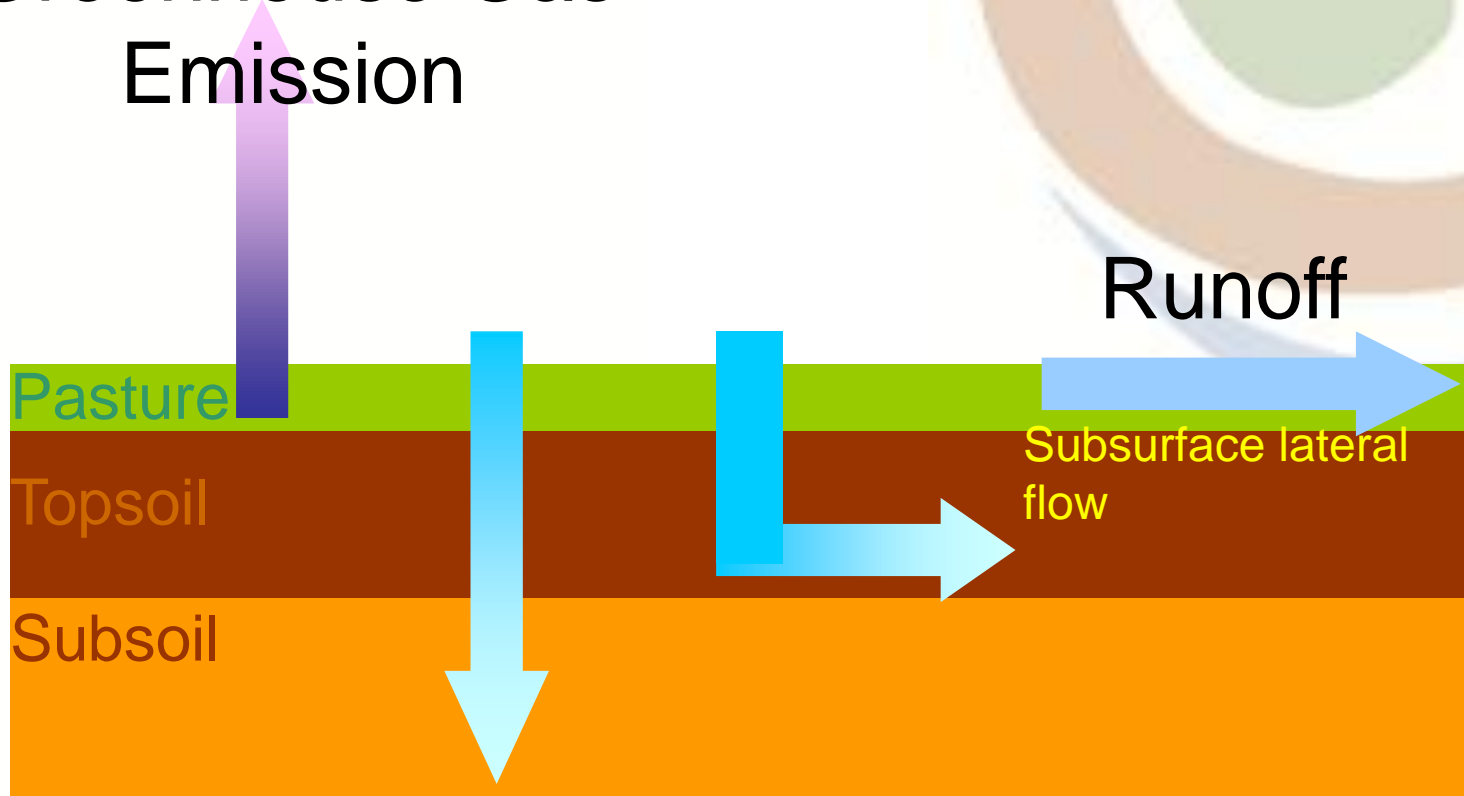
How were the risks assessed?

- The Farm Nutrient Loss Index (FNLI) software was used to assess risk
- A product of the *Making Better Fertiliser Decisions for Grazed Pastures in Australia* project
- Developed for farm advisors in dairy, sheep and beef
- Used to **Predict Risk** of Nitrogen & Phosphorus loss
- Farm paddock scale
- Also provides possible mitigation strategies



What nutrient loss pathways are considered?

Greenhouse Gas Emission



Deep Drainage

Source: Better Fertiliser Decisions for Grazed Pastures in Australia , DPI Victoria



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Factors considered in assessing risk

Transport and flow delivery factors

Soil type

Waterlogging

Proximity to waterways

Rainfall

Groundcover

Landscape features

Nutrient source and management factors

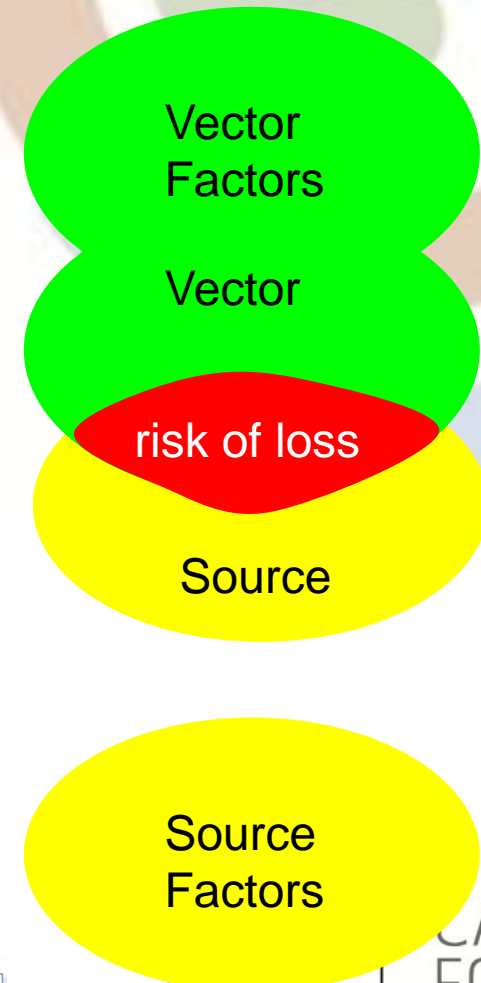
Phosphorus

Nitrogen

Effluent

Stocking rate

Hotspots



Source: Better Fertiliser Decisions for Grazed Pastures in Australia, DPI Victoria

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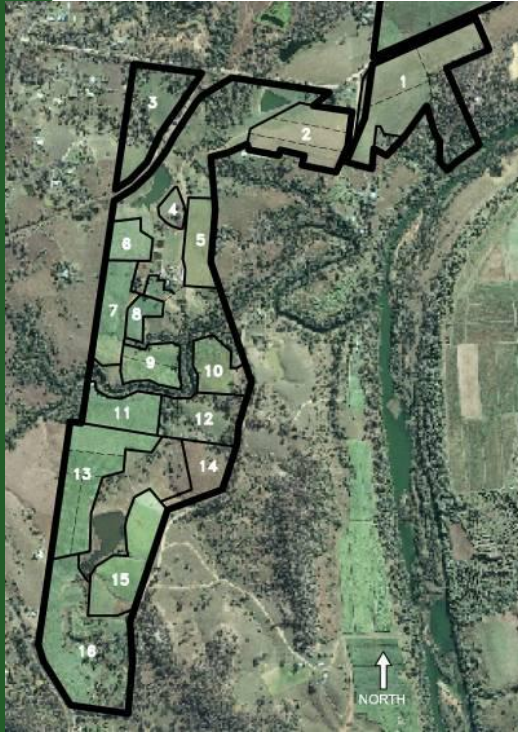
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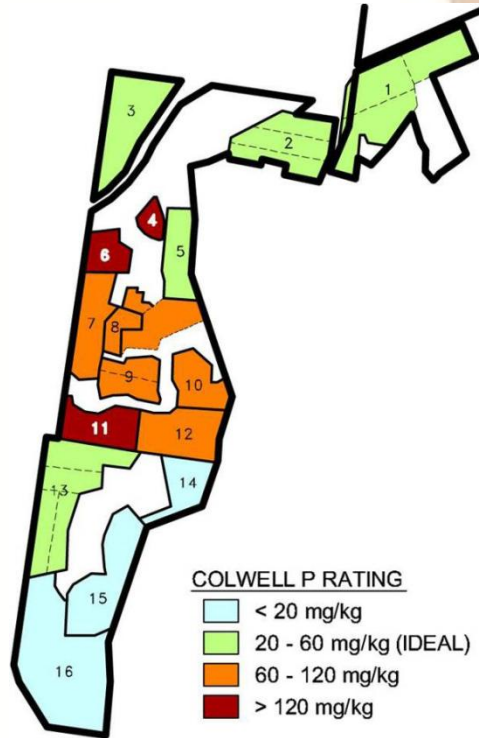
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What's happening with Phosphorus?

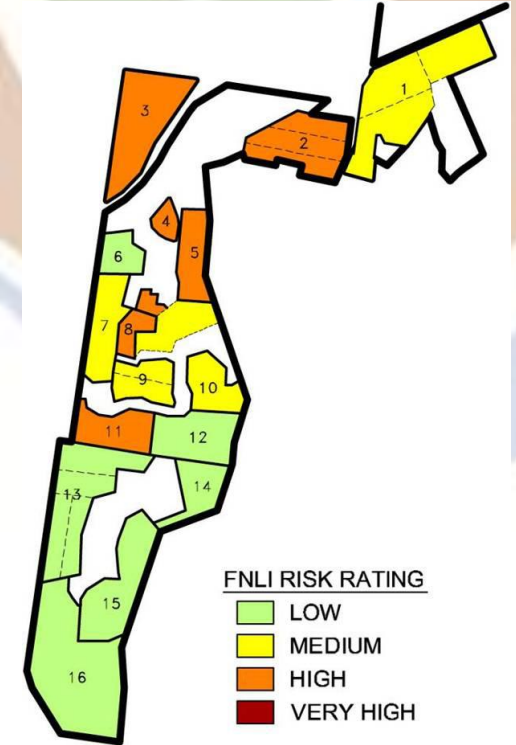
- Case Study Farm



Farm map



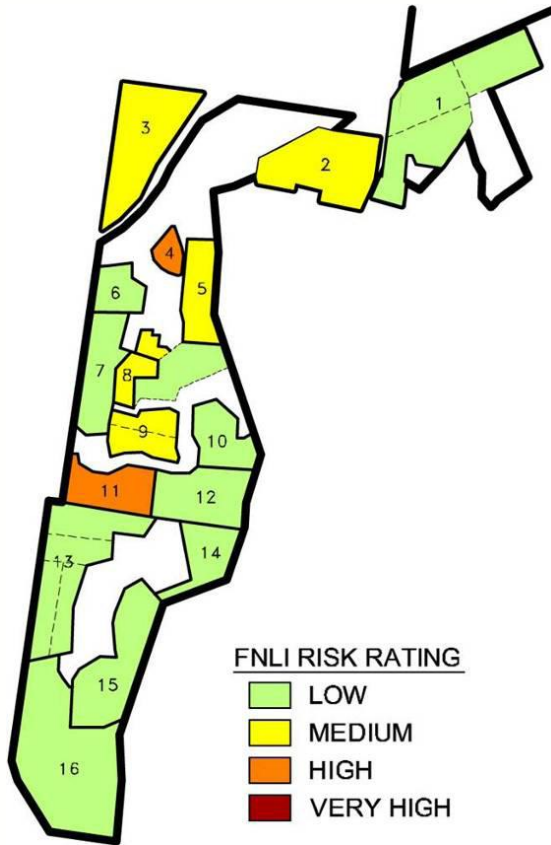
Colwell P Status



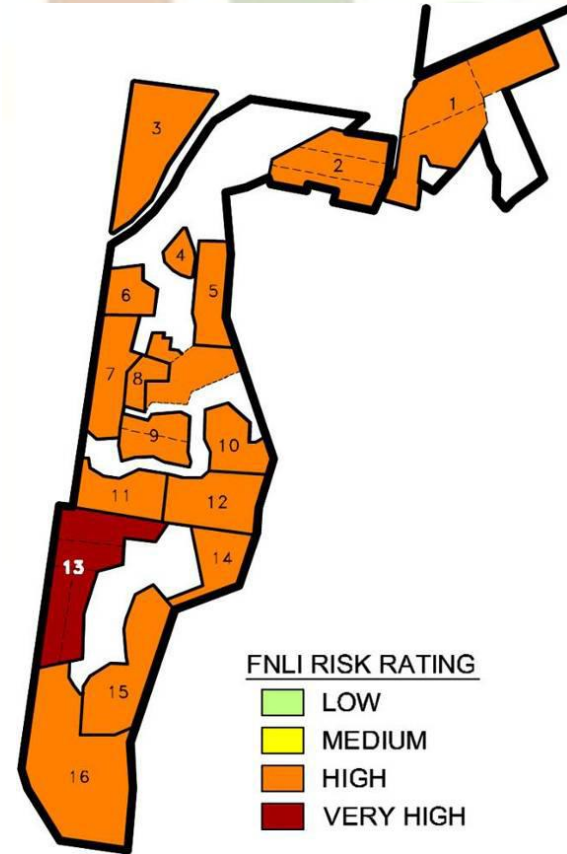
Risk of P Loss from Runoff

What's happening with Nitrogen?

- Case Study Farm



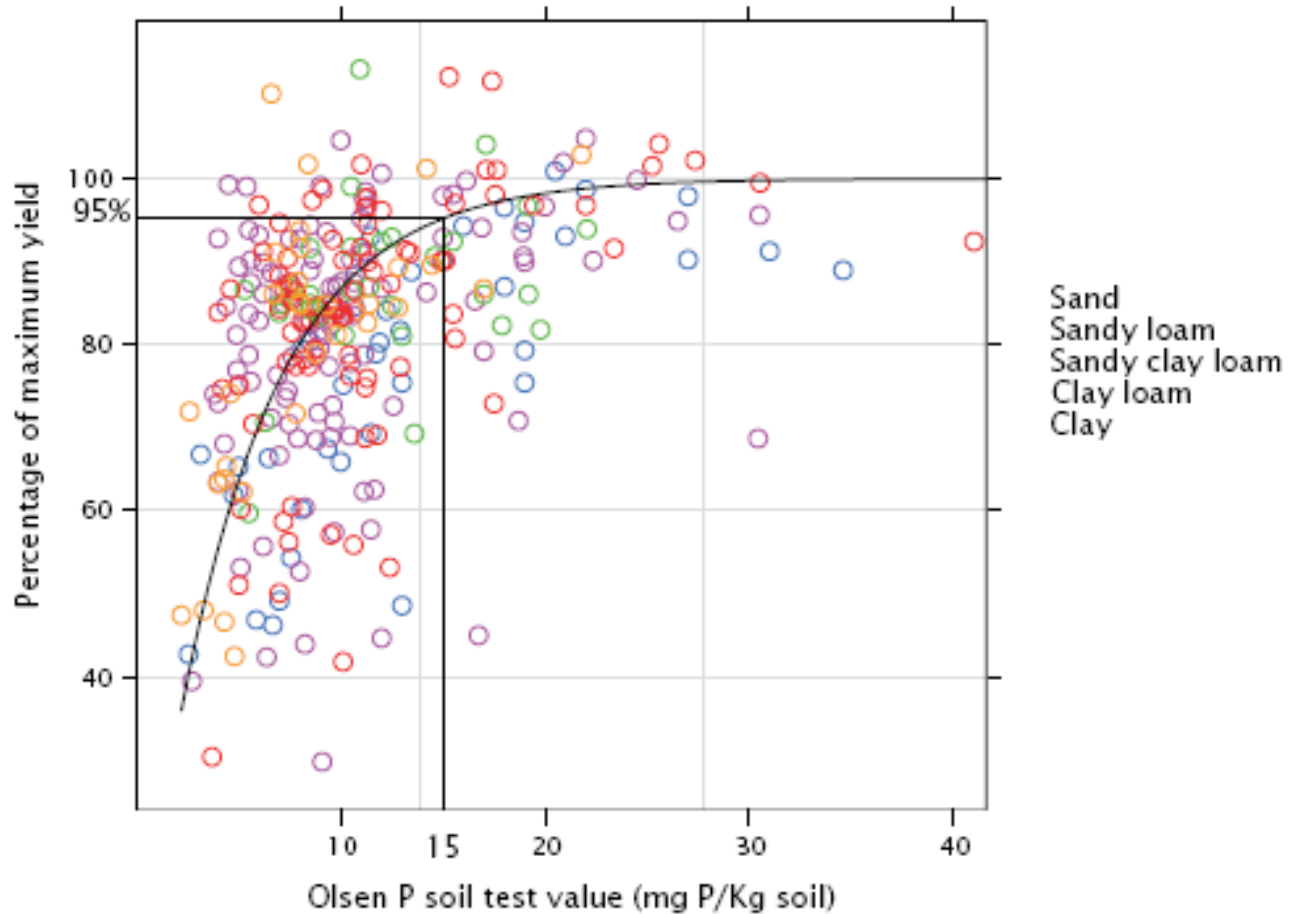
Risk of N loss in runoff



Risk of N loss in deep drainage



Optimising nutrient application



Source: Better Fertiliser Decisions for Grazed Pastures in Australia , DPI Victoria

Case Study Farm – High Productivity Paddocks

Findings

- No nutrients were limiting pasture growth
- Soil Nitrate & P levels were above current production requirements

Recommendations

- N - Plant tissue tests and adjust N applications accordingly
- P - Postpone P application for 2-5 years before resuming however continue soil testing during this period.
- Re-use farm nutrients on paddocks that benefit most

Benefits

- Cost savings: \$90-100/ha/year in fertiliser costs (\$5000/yr)
- Increased nutrient use efficiency
- Reduction in unnecessary accumulation of nutrients
- The risk of potential nutrient loss is reduced, and thus the risk to water quality is also reduced.



Case Study Farm - Medium Productivity Paddocks

Findings

- pH - Soils were slightly acidic
- EC - Soils were moderate to saline
- Organic Carbon - Low to moderate levels

Recommendations

- Set production targets for lower yields (salinity limitations)
- Salt tolerant pastures should be selected
- P is >40 mg/kg, therefore unlikely to respond to P applications
- Soils below pH 5.5 should be limed at 2-3 t/ha
- Applications of feedpad manure to increase Organic Carbon, but manage P levels. Do not allow Colwell P to reach excessive levels (> 70 mg/kg).

Benefits

- Nutrient management considers soil constraints
- Strategies improve nutrient efficiency and production
- Potential nutrient loss risks reduced



Summary of Outcomes

- The farmer was appreciative of the individualised service, and specific advice at a paddock scale
- Nutrient applications are now more targeted
- The farmer has postponed or reduced fertiliser applications in some paddocks while maintaining good levels of production
- Nutrients are used and transferred more efficiently on farm, reducing the likelihood of unnecessary accumulation
- Potential risks of nutrient loss and the impacts to water quality have been reduced





Partners & Investors Thankyou!



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