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Mitigation action prioritisation & resource tool for freshwater farm plans

09 February 2022

Katrina Macintosh, Christophe Thiange, Aslan Wright-Stow, Craig Depree & Ross Monaghan

Co-developed & funded by DairyNZ; Our Land And Water (Rural Professionals Fund 2020-21); AgResearch



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Overview

- What is FarmAPT?
- How it works?
- End-user testing
- Next steps for development



2

What is FarmAPT?

- **Farm Action Prioritisation Tool** (for dairy)
- Compulsory freshwater farm plans
- Online geospatial resource tool
- Identify & prioritise mitigations for water quality
- Easy access to data & resources
- Used in conjunction with expert knowledge & on-farm visit(s)

How it works?

- New dairy typology framework
 - Climate; slope; soil drainage & wetness
- Nearest downstream water quality data
 - LAWA (monitored) & NIWA (modelled) = ***catchment context***
- Comprehensive list of mitigation actions (over 20 yrs. research)
- Rank actions by:
 - ‘Effectiveness’ or ‘Cost-effectiveness’ (for N, P, sediment & *e. coli*)
 - ‘Established’ or ‘Developing’ mitigation
 - ‘Capital’ cost
- Quick link(s) to resources for implementation

FarmAPT - Farm Action Prioritization Tool

Pick a location on the map to get started.

[Go to map](#)

This freely available online-spatial mitigation action prioritisation resource has been designed for use when preparing for environmental risk discussions with landowners and the development of Farm Environment Plans (FEP). It has been co-developed by [DairyNZ](#), the [Our Land and Water National Science Challenge](#), and [AgResearch](#).

The aim of the tool is to link users to the most up-to-date science and resources, physical parameters of a farm, and to help prioritise FEP mitigation actions based on key water quality attributes, to ensure on-farm effort is targeted and advice is consistent.

The tool is designed to guide the selection and prioritisation of actions for inclusion in a FEP, as well as directing users to useful resources, information, and guidelines.

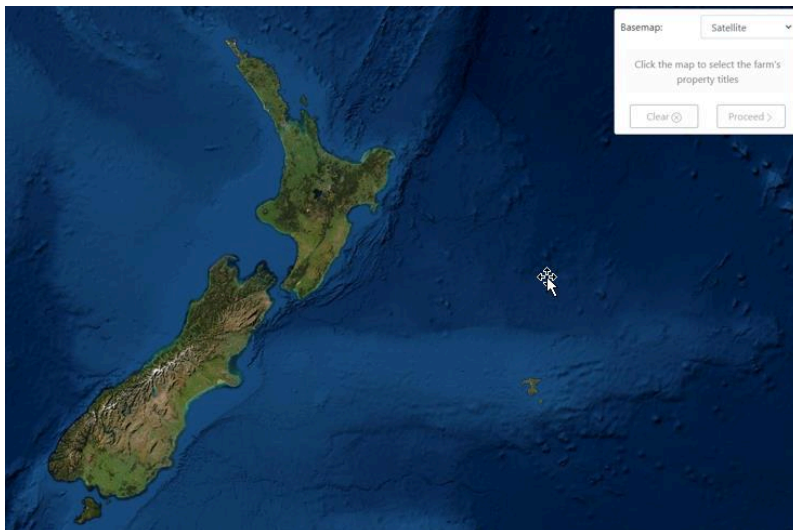
The functionality of the tool enables users to:

- select a farm
- access farm physical data relating to climate, soil, slope, and wetness
- view surface water quality data (and associated water quality attribute bands)
- prioritise mitigation actions
- view a description of each action, and sources of relevant information

The tool developers acknowledge that no two farms are the same, and so each farm will have a unique solution for a given question. This tool should therefore be used in conjunction with expert knowledge and on-farm visit(s) to ascertain both site specific practice(s) and farmer goal(s)/outcome(s).



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Location

Property titles:
1. 214068
2. 97213


Typology

Climate: Cool Warm

Soil: Light Well draining Poorly draining

Slope: Flat Rolling

Wetness: Dry Moist Wet Irrigated



Surface Water Quality

Nitrogen

TON 1.42 mg/L B Recorded at site EW-00012

NH4 0.71 mg/L C Recorded at site EW-00012

TN 3.29 mg/L Q4 Recorded at site EW-00012

Phosphorus

DRP 0.021 mg/L D Recorded at site EW-00078

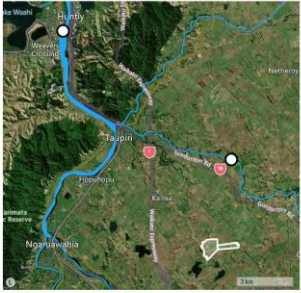
TP 0.1 mg/L Q4 Recorded at site EW-00012

Bacteria

E. coli 1400 CFU/100ml D Recorded at site EW-00012

Sediment

Clarity 0.93 D Recorded at site EW-00078



Actions (40)

Effluent (5)
 Erosion/Soil (5)
 Farm System (2)
 Grazing/Cropping (1)
 Irrigation (3)
 Nutrient (11)
 Waterways (14)
 Winter Grazing (2)

Sort by: Effectiveness (N P B S) Cost-Effectiveness (N P B S) Mahinga Kai Capital cost

Optimum soil test P concentration

Effectiveness (N P B S)
 Cost-Effectiveness (N P B S)
 Mahinga Kai (L)
 Capital cost (L)
 Established (E)

Nutrient more...

Description
Matching soil Olsen P concentration to pasture and forage crop requirements avoids enriched soil P concentrations that are more likely to lose more P in runoff compared to that in an agronomic optimum concentration

Co-benefits

- None Reduced fertiliser cost or applied when response is greatest

Factors limiting uptake

- Cost of soil testing and number of tests per area to provide a more specific fertiliser programme

Potential measurements

- Average Olsen P by enterprise and region (can be calculated by fertiliser companies or soil testing labs (ARL and Hills))

Good Farming Practice
This action aligns with action 4 of the [Good Farming Practice](#) Action Plan for Water 2018

References
McDowell et al. 2003, McDowell et al. 2018

End-user testing...

- Prototype version has been user tested:
 - Rural Professionals
 - Dairy Environment Leaders
 - Dairy farmers
- High-level feedback:
 - Found the tool easy to use
 - Would recommend it to others
 - High level of support for the tool
 - Added value it brings to the farm planning process

Next steps...

- Working with milk companies to deliver API access for use in farm plan preparation
- Further farmer testing
- Public facing web application
- Build in future additional functionality
 - Alignment of water quality actions with GHG's

**Thanks
&
any questions?**

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