Case Study

O'Connell and Surrounds Improved Systems

Improving the accuracy and efficiency of chemical applications

Case Study developed by Che Trendell, Project Officer - Farmacist. July 2023

Background

Dale and Karinda Anderson farm 160 hectares of sugarcane on their property near Calen, located between Proserpine and Mackay. The couple have amassed a wealth of experience across numerous agricultural industries from growing small crops and opium poppy and tending sheep flocks in Tasmania, to driving cotton pickers and grain headers across the broadacre cropping regions of Queensland and New South Wales.

In addition to running their 10,000 tonne cane farm, Dale and Karinda also operate the Oh Deere Farm Stay and farm tours. They are passionate about teaching people about agriculture and where their food comes from.

In 2021, Dale and Karinda joined the OASIS project to focus on improving their chemical selection and application. The OASIS project engages with landholders within the O'Connell and Proserpine basins to provide pesticide and nutrient advice, planning support and practice change extension, supporting beneficial water quality outcomes.

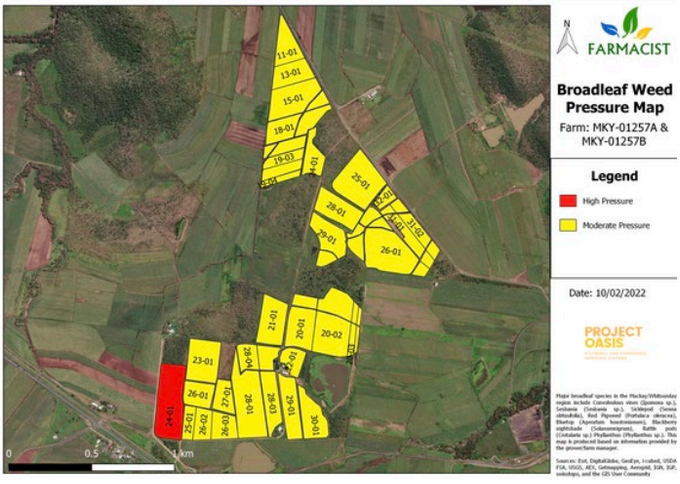

Figure 1: An example of the maps provided as part of the Anderson's Pesticide Management Plan

QUICK FACTS

Grower: Dale and Karinda Anderson

Location: Calen

Area: 160ha

Project Focus: Chemical Management

The Reef Trust VII - O'Connell and Proserpine Basins Water Quality Project is funded by the Australian Governments Reef Trust and administered through Reef Catchments Pty Ltd. The project aims to improve water quality entering the Great Barrier Reef from broad-scale land use, to increase resilience and health of the Great Barrier Reef and to increase awareness and adoption of land management practices that improve and protect the conditions of soil, biodiversity and vegetation.

Developing a Pesticide Management Plan

As part of the agronomic component of the OASIS project, a farm Pesticide Management Plan was developed for the Andersons. This plan outlined recommendations for each growth stage of the sugarcane crop and presented these recommendations on a map for quick and easy reference.

The plan also provided specific information regarding correct nozzle selection, no-spray windows, registered product option for each crop stage and farm maps outlining buffer zones and weed pressure.

"I found the pesticide plan really useful and it also gave me an opportunity to call Farmacist and talk about chemical options. It's always good to have someone to run things by and get a different perspective"

Dale Anderson

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Diagnosing a water quality problem

Dale had noticed that over time, his applications of 2,4-D amine and glyphosate were becoming less effective and he was not getting the weed control he had expected.

Through discussions with Farmacist, he began to suspect his bore water being used for spray activities was affecting his chemical efficacy. He had increased his chemical rate and added ammonium sulphate to get a better weed kill but it had not proven effective.

A water sample was sent for analysis and the results showed high levels of hardness and bicarbonates.

> ***"Bicarbonates and hardness in spray water will impact the effectiveness of herbicides and many water samples from across the Mackay district are showing high levels of both"***
>
> ***Adam Keilbach, Senior Field Officer, Farmacist***

Analyte	Results	Guideline	Comment	Recommendation
pH	7.7	6.5-8	Alkaline	Very alkaline pH causes chemical breakdown. Use acidifying adjuvants (e.g. LI 700 or Collide 700) especially when using glyphosate herbicides
Electrical Conductivity (dS/m)	1.3	<4.7	Low	Generally suitable for spraying
Water Hardness (mg $CaCO_3$/L)	470	<250	Very Hard	Use Ammonium Sulfate or Liase in spray tank mixtures when using Glyphosate.
Bicarbonates (mg CaCO3/L)	510	<150	Very High	Bicarbonates concentration above 250ppm have an impact on Group A (DIM) herbicides. Add 2L/100L of Liase to overcome issues.

The results above were obtained from attached laboratory analysis conducted by Nutrient Advantage®

Safe to Use | Use with caution! | Avoid using or add adjuvants (e.g. Ammonium Sulfate)

Figure 2: Results from the Anderson's spray water sample

The recommendation was to use an alternative water source. As there was no alternative available to them, the project provided funding to help with the purchase of two 22,700 litre rainwater tanks for their shed.

Figure 3: Dale and Karinda have imporved their chemical management through involvement in the OASIS project.

Optimising Chemical Application

In addition to the rainwater tanks, the Andersons also purchased nozzles, multi bodies and a section flow rate controller through project funding.

The flow rate controller will control the rate at which herbicide is sprayed over the crop. The desired application volume is entered, and the controller alters pressure to provide the necessary flow.

By precisely controlling the flow rate of the herbicide, the Andersons will be able to optimize the droplet size and flow rate, which is particularly useful at the beginning and the end of rows to ensure adequate weed coverage.

Figure 3: Flow rate controller installed on the Anderson's spray rig as part of Project OASIS funding.

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