Paddock to Reef Program

Growers in the Mackay region are making a difference to water quality and inshore Reef resilience. REEF

Mackay growers are implementing practice changes to benefit on-farm productivity and profitability, while directly contributing to important improvements in water quality flowing through the regional catchment area.

Growers have been working together with the support and agronomic advice of industry delivery providers to tackle the retention of dissolved inorganic nitrogen (DIN) and sediment within their farming practices. The goal is to keep these inputs on the farm where they are essential for optimal sugarcane production, minimising potential runoff into nearby waterways.

Data captured during the process flows through to the Paddock to Reef Integrated Monitoring, Modelling and Reporting Program (Paddock to Reef program). This program provides a framework for evaluating and reporting progress towards the Reef 2050 Water Quality Improvement Plan (Reef 2050 WQIP) targets and objectives, through the <u>Reef Water Quality Report Card.</u>



One such grower in the Mackay region is Jeff Grech whose sugar cane farm is in the Plane Creek Catchment. Jeff worked with Mackay Area Productivity Services (MAPS) to help improve his farm's soil health which has in turn, reduced the amount of DIN leaving his farm and entering nearby waterways.

Jeff considers himself a steward of the land and wants to take care of this land for the generations to come. If nutrients or pesticides applied on his farm end up in local waterways and eventually into the inshore marine environment then he sees it as a problem. Jeff wants those inputs to stay on his farm to improve the sugarcane crop.

Estimating water quality improvements using P2R Projector

To help growers estimate water quality benefits from individual farm projects, industry delivery providers use a tool called the 'P2R Projector'.

Developed under the Paddock to Reef program, the P2R Projector estimates the water quality improvements at a farm-scale, based on the type of practice changes the grower has implemented. It utilises practice change questions and paddock modelling outputs to enable estimation of the potential impact of changing farm practices.

Both the Australian and Queensland governments provide funding for the Paddock to Reef program, which has continuously evolved over fifteen years to enhance its scope, methodology, and practical application.

When a grower is undergoing a practice change, the





" If there is something I'm doing on my farm that is hurting the Reef, then it is also hurting my farm." - Jeff Grech

delivery provider records the area where the practice change will occur. They then ask a series of management practice questions outlining what has been done previously and what will be done moving forward. This is loaded into the Paddock to Reef (P2R) Projector tool.

The modelled improvements in the quality of water being transported during rainfall events, after practice changes have been made has been validated against Paddock Monitoring program field trials as a part of the Paddock to Reef program. In Jeff's case, his practice changes included planting a legume fallow crop and planting his sugarcane 3 rows at a time directly into raised beds. This practice minimises field traffic, reducing excessive land cultivation and compaction ultimately improving soil health, reducing erosion, and improving water quality around the farm.

While these changes can be visually seen on the farm, the P2R Projector tool allows agronomic advisors and growers to understand the likely water quality improvement in terms of DIN savings. The P2R Projector tool also shows fine sediment savings as a result of farms engaging in practice change, minimising losses from erosion.

This data is then aggregated for all projects and included in Paddock to Reef program reporting to demonstrate progress towards the Reef 2050 WQIP targets. The grower's details and the information collected by the delivery provider are

Enhancing soil health contributes to improved regional water quality and also boosts a farmer's economic prospect, ultimately leading to the development of more sustainable farming.

protected under a confidentiality agreement and cannot be shared. This information is de-identified and only used to evaluate the effectiveness of the program.

Social monitoring as part of the Paddock to Reef program

The Paddock to Reef program also uses a social monitoring survey to assess attitudes, motivations, and perceived barriers of the land management practices that growers are adopting as part of the water quality project they are participating in. This data allows extension officers working with landholders in the region to tailor their services to provide projects and communications to fit the needs of the landholders. This data is crucial in understanding how various factors influence decision making for future practice changes.

Jeff's advice to those just starting the journey of adopting newer practices is to speak to your productivity services officers. He laughingly comments that he has Mackay Area Productivity Services (MAPS) on speed dial! Anytime he sees something that isn't quite right or needs some help, they arrange a visit, to advise him on what to do. Jeff encourages other growers to engage in practice changes to "get that one thing to make your farming practice just a little bit better."

Evaluating and sharing results

Aligned with the Reef 2050 WQIP framework, the Paddock to Reef program evaluates the adoption and effectiveness of management practices made by growers such as Jeff. These

are combined with catchment pollutant delivery information and the condition of catchment areas to help us understand the benefits to waterways and the overall health of inshore marine ecosystems. The program's monitoring and modelling activities encompass a wide range of attributes, spanning from individual paddock assessment to sub-catchment, catchment, regional, and even Great Barrier Reef-wide evaluation.

Updates on the latest water quality results from the region are shared at the Paddock to Reef Integrated Science Forum which is held annually. The Forum features presentations from scientists about the latest results from water quality monitoring and modelling, and presentations from local industry bodies and growers about on-farm projects to improve water quality. The forum provides an opportunity for landholders, extension staff, industry bodies, community groups and local government to learn more, network and provide feedback.

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Australian Government







