



Digital tools to reduce nitrogen pollution in Great Barrier Reef catchments

The 1622 apps provide farmers support for optimal nitrogen application rates increasing crop yield while reducing adverse environmental impacts.

The 1622 project was developed to address the discharge of nitrogen from catchments adjacent to the Great Barrier Reef (GBR). The Reef's health has declined because of both natural and human causes over the last several decades. Between 1985 and 2012, coral cover on the GBR has declined by nearly 50%.

Helping farmers protect the Great Barrier Reef without sacrificing yields.

The challenge

Land-based water pollution, including agricultural activities, is one of the main threats to the health of the GBR and one of the leading causes of the deterioration of these marine and coastal ecosystems. Despite investments and measures put in place to improve management practices and reduce pollutant discharges, progress has been slow.

Directly related to the amount of fertiliser applied, nitrogen laden agricultural discharges are a significant contributor to land-based water pollution in GBR-adjacent catchments. The largest contributor to this type of pollution (78%) is sugarcane farming in nearby catchments (State of Queensland, 2020). Due to its high-value, farmers apply high rates of N fertiliser to maximise yields.

Reducing nitrogen fertiliser application rates on a dominant crop in coastal regions, while optimising usage, has the potential to both greatly reduce pollution into the catchments and preserve yield productivity.

The response

The 1622 project targets nitrogen reduction in sugarcane farming by providing farmers information needed to undertake more environmentally friendly management practices, achieving the dual target of improving water quality and marine ecosystem health while reducing costs and improving profitability for farmers.

The impact

The 1622 project is comprised of two apps, one (1622WQ <https://wq.1622.farm/>) has been publicly launched to provide farmers with real-time information and the other is being developed for commercial use, in collaboration with Farmacist and the GBR Foundation.

A recent independent evaluation found the 1622 apps have the potential to provide between \$20.4 million and \$62.9 million in economic impacts (net present value terms, 2020) between 2021 and 2030. The largest contributor to the benefits was cost savings from reduced fertiliser use, followed by improvement in ecosystem service values.

It also found several other important benefits, including trade competitiveness, management of risk and uncertainty, increased access to resources, and development of human capital through innovation and knowledge advancement.

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