

## Understanding the perceptions of producers: A tool for the extension toolbelt

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**Abstract.** It has long been accepted that we must consider the 'individual', their biases and perceptions when working through one-on-one engagement and extension approaches to achieve behavioural change, but this can be easier said than done. Surveying the opinions of farmers through water quality practice change projects and other mechanisms in the Great Barrier Reef catchment has been in place since mid-2019. These surveys assess the attitudes, group norms, self-efficacy, motivations, and barriers of farmers in the sugar cane, grazing, horticulture and banana industries and provide extension officers with a practical way to consider the individual factors of their producers. The insights from these surveys can add a tool to the extension toolbelt that extension officers can use to adjust their approach for the individual and meet them where they are on the change continuum. These insights can also help build extension officers' own professional skills in line with the emerging Extension Model of Practice – a framework for agricultural extension.

**Keywords:** Perceptions, practice change, Extension Model of Practice, Great Barrier Reef

### Introduction

There are 35 catchments within six natural resource management regions that drain run-off from 424,000 square kilometres of coastal Queensland into the Great Barrier Reef (the Reef) (Queensland Department of Environment and Science 2019). The Reef 2050 Water Quality Improvement Plan (Reef 2050 WQIP) (Queensland and Australian Governments 2018) identifies how industry, government and community will work together to address land-based sources of water pollution to improve the quality of water flowing to the Reef ecosystems. The Reef 2050 WQIP included a human dimension target recognising that the Reef needs to be considered as a socio-ecological system. Human dimensions were defined as the human factors that exist at all social scales and play a role in shaping social, economic, cultural and environmental outcomes associated with the Reef. These human dimensions factors can range from the aspirations and capacities of agricultural producers, industries and communities to their stewardship practices, and the broader governance of the Reef. The Reef 2050 WQIP set the human dimension target as the 'Active engagement of communities and land managers in programs to improve water quality outcomes is increased' (Queensland and Australian Governments 2018, p.15). The human dimensions target recognises that engaging the communities and land managers who influence water quality is critical to support progress towards land and catchment management outcomes. The following outlines how the surveying of agricultural producers has been used in Reef water quality practice change projects and its potential to be applied broadly within the extension profession.

### *Reef water quality practice change*

The dominant land use within the Reef catchment is agriculture (Queensland Department of Environment and Science 2019). There are many agricultural practice-change projects, where producers work to improve farm practices that focus on reducing sediment, nutrients and pesticides being lost to local waterways to ultimately improve water quality outcomes for the Reef. Recognising that presenting people with science and facts alone does not lead to behaviour change, behavioural and social science principles have increasingly been embedded in practice change projects to increase their impact. One of the ways in which behavioural and social science have been incorporated in projects is through the monitoring of agricultural producers' perceptions of practice change. The Queensland and Australian governments have been using surveys to monitor producers' perceptions of practices within Reef water quality practice change projects since mid-2019. This monitoring was designed to better understand why change is or isn't happening and to provide insight into how practice change can be accelerated to achieve Reef water quality outcomes.

The primary purpose of the social monitoring data is to track responses regarding agricultural management practice adoption and identify any trends evident over time that can both give context to and help inform improved progress towards the Reef 2050 WQIP targets. While reporting against the other targets in the Reef water quality report card identifies if, and how much, change has occurred, the social monitoring data can provide insights into why, or why not, producers are making certain agricultural management practice decisions and the differentiating factors. The data can also provide feedback to agricultural and natural resources management

(NRM) organisations on the drivers and barriers of change which can be used to adaptively manage their approach to meet the needs of involved producers and achieve greater outcomes.

### **Reef water quality and the extension profession**

Extension is a crucial link in improving Reef water quality. In most instances, extension professionals are the conduit between government and agricultural producers. Demonstrating the impact that investment is having on the ground through extension is an important role for both government and those who receive funding. However, the impact of extension alone, particularly in terms of direct practice change, has been difficult to capture and establish empirically (Eberhard et al. 2021). Part of the difficulty in establishing the impact of extension is the breadth of scope of the extension profession. One way to address this issue is through a consistent approach to the extension practice. The Extension Model of Practice (EMOP) is one such model that establishes a model of practice for extension based on farmer-centred practice (Williams et al. 2021). The EMOP identifies the core practices, enablers, drivers of change, and the external structural context in which the extension profession operates.

The core practices within the EMOP include relational practice, change practice and technical knowledge practice (Williams et al. 2021). The relational practice encompasses the extension professional's skills in building rapport and an understanding of the agricultural producer's values and goals. The change practice are the skills needed to achieve practice change with the producer. Technical knowledge practice includes the content knowledge required such as of the production system and the environment. Williams et al. (2021) suggests a process for implementing the EMOP that consists of six steps. These steps include build relationships, understand, explore and decide, implement, monitor, and reflect and review. This implementation process supports a shared understanding of the values and goals of the producer.

A new survey called the Perceptions of Practices (PoP) survey was implemented across Reef water quality projects (or agricultural practice change projects) in 2023. The PoP survey, when asked at the start of working with a producer, is an example of a process that can aid the steps of building relationships and understanding the producer as part of implementing the EMOP. Additionally, if the PoP survey is repeated during or after working with a producer, the data can also be useful in the monitoring, reflecting and reviewing steps. Delivering the PoP and reflecting on the responses makes explicit the processes that may generally be informal. The following sections describe the PoP survey, where it came from and how it is implemented, and then its usefulness for the extension profession.

### **An overview of the PoP survey**

#### ***The process***

The PoP survey is run with a producer once an extension professional has established that they are going to work with them on a practice change project. The questions are asked of the same individual at two time points – at the start of the project (initial) and at the end (implemented). The producer has the choice of answering the questions with the extension professional or they can complete it by themselves. Answering the PoP questions is voluntary for producers with participation initiated through an informed consent process. The informed consent process involves the extension professional advising producers of data use and management which ensures producer privacy.

#### ***The survey***

An initial short survey of six questions was designed and implemented in 2019 across Queensland and Australian Government Reef water quality practice change projects. This survey was designed to measure the biggest individual level predictors of behaviour change as suggested by Hobman and Taylor (2018), a report commissioned by the Queensland Government to identify indicators of agricultural practice change. These identified predictors included attitudes, group norms, self-efficacy, motivations and barriers. Since 2019, there have been over 20 organisations within the Reef catchment that have delivered the surveys.

The survey questions were reviewed in 2022 after three years through a multiprong approach:

- Consultation with extension professionals who deliver the survey to determine any issues and opportunities with the existing survey questions.
- Review of collected survey data to identify indicators that may not be effective.
- Desktop research to confirm the most relevant survey questions.
- Consultation with key stakeholders where organisations involved with collecting social monitoring data were targeted.
- Expert review from two independent peer reviewers.

- Review from the Independent Science Panel that provides science-based and technical advice to the Australian and Queensland governments on their water quality science program needs (Queensland and Australian Governments 2023).
- Piloting the survey with agricultural producers from the sugar cane, grazing and horticulture industries to ensure the wording and flow of questions was suitable.

The new PoP survey now contains slightly different question wordings for the before (initial) and after (implemented) time points which are listed below. Producers have the option to not respond or to answer 'I don't know' for each question. Extension professionals continue to gather agricultural practice information in addition to the questions as well as now some basic demographic information. Once agricultural practice information has been collected, the PoP questions are answered in relation to the practice that the extension professional and producer will be working on over the project. The practices that producers work on in these projects align with the water quality risk frameworks (Queensland Department of Environment and Science 2020). The water quality risk frameworks rank agricultural practices based on their water quality risk for each commodity and Reef catchment region.

Procedural knowledge Initial - How would you describe your knowledge and understanding of how to implement the practice change/s that will be covered in this project? Implemented - How would you describe your knowledge and understanding of how to implement the practice change/s covered in this project? Responses are measured on a five-point Likert scale from 'Very limited' to 'Excellent'.

Self-efficacy Initial - How confident are you in your ability to adopt the practice change/s that will be covered in this project? Implemented - How confident are you in your ability to continue the practice change/s covered in this project? Responses are measured on a five-point Likert scale from 'Not at all confident' to 'Extremely confident'.

Outcome expectancy Initial - To what degree are you expecting a positive overall result from the practice change/s you will make in this project? Implemented - How would you describe the overall result of the practice change/s covered during this project? Responses are measured on a five-point Likert scale from 'No positive result' to 'A very large positive result'.

Additionality Initial - How likely is it that you would change your practice/s if you were not in this project? Responses are measured on a five-point Likert scale from 'Not at all likely' to 'Extremely likely'.

Behavioural expectation Implemented - How likely are you to continue with the practice change/s covered in this project? Responses are measured on a five-point Likert scale from 'Not at all likely' to 'Extremely likely'.

Descriptive group norm Initial - Thinking about the growers/graziers you know or know of, how many do you think are changing or have changed the practice/s that will be covered in this project? Implemented - Thinking about the growers/graziers you know or know of, how many do you think are changing or have changed the practice/s covered in this project? Responses are measured on a five-point Likert scale from 'None' to 'All'.

Motivations Initial - What are the main reasons (select up to 3) for why you would make the practice change/s that will be covered in this project? Implemented - What are the main reasons (select up to 3) for why you would make or made the practice change/s covered in this project? Producers are provided a list with the following options: For financial reasons (e.g. increased profitability, save money, etc.), To maintain and/or improve productivity, To save time, For regulation compliance, For the environment, To improve my farm for future land managers, Other landholders in my area use this practice, To meet consumer expectations of land management/gain market access, To improve soil health, To make managing my farm easier. There is also a free response space for 'Other' motivations.

Barriers Initial - What are the main challenges or barriers (select up to 3) to making the practice change/s that will be covered in this project? Implemented - What are the main challenges or barriers (select up to 3) to making the practice change/s covered in this project? Producers are provided a list with the following options: There are no challenges or barriers, Financial (e.g. it costs too much, don't have the money, worried about profitability, it's not worth the return on investment, etc.), I am worried about production, I don't have time, I need more information before I can use this practice (initial)/I need more information before I can continue to use this practice (implemented), I don't think it will have a positive impact on the environment, It is not the way I have managed my farm in the past, Weather and seasonal issues, Not enough support from decision making partners (e.g. family, business partners, etc.), I tried it before and was not happy with the outcome, I am constrained by the availability of contractors and labour/or

contractors' equipment, No one else is doing it, Additional administrative work (e.g., record keeping, office work, etc.). There is also a free response space for 'Other' barriers.

### **Perceptions of delivering surveys**

The questions and process described in the previous section can prompt further conversations about a producer's values and goals not only about the practice at hand, but for their broader business. Some of the feedback from extension professionals who have been involved with monitoring landholders' perceptions within Reef water quality practice change projects is provided below.

One extension professional noted that this type of monitoring was useful in building their understanding of the people they are working with stating that:

The thing that it gave us, particularly in the early stages not really knowing the participants personally, was a sense of what the barriers to making that practice change were and the real motivations behind their involvement in the project. (Extension Professional 1)

This quote demonstrates the benefit of a systematic approach to building relationships and an understanding of producers. In other words, using a survey such as the PoP can assist extension professionals in building rapport that is essential in working with producers. As the quote suggests, the PoP may be particularly useful for early career extension professionals in identifying key behavioural change drivers. This type of survey can also be useful for more experienced extension professionals to check that assumptions and biases are not influencing their picture of producers' values and goals. Using the PoP survey within the EMOP framework can assist in providing structure to the engagement process through creating regular reflections and reviews which can ultimately improve extension professionals' relational and change practice.

The same extension professional also explained that the survey was useful in demonstrating the impact they can have on an individual as well as being able to adapt project delivery noting that:

It gave us a measurable, quantitative look at the impact that the projects had on people. It's straightforward to measure changes in production and financials because we can capture the data, benchmark it and compare. But doing that with the people side is not quite as straightforward, nor do we do a very good job of actually capturing it as an industry. So, seeing that I suppose either validated the processes we were using or helped us to adapt the delivery of the project. (Extension Professional 1)

This sentiment was also supported by another extension professional:

I have also found the results of the social monitoring questions to be useful for project implementation and review. It helps me to understand differences in attitudes and behaviours and how this changes over time in the group of landholders that I'm working with. (Extension Professional 2)

These two quotes highlight that gaining data before and after a project on producers' perceptions of practice change is a means of monitoring, reflecting and reviewing the work that has been achieved. A survey like the PoP provides an avenue to demonstrate change in a cohort of producers and allow for adaptive management not only within projects but across agricultural and NRM organisations' program of work. This data can be useful to demonstrate to funders the impact of investment but can also demonstrate an organisation's capability and success in working with producers. Incorporating the PoP or a similar survey will help in capturing and demonstrating the impact of extension.

Delivering a formal survey can feel uncomfortable for some extension professionals as highlighted in the below quote:

It can be a bit daunting to raise the social monitoring questions with landholders that you are trying to establish a new relationship with. I make it clear that it's voluntary and "there's no wrong answers" and have found that most landholders are happy to answer the questions. (Extension Professional 2)

In response to this sentiment that delivering a survey can be 'daunting', training was developed to increase extension professionals' skills and confidence in delivering surveys. This training was designed to increase familiarity with the concepts and the questions, and to standardise the way in which the survey is broached and completed with producers. This training is run with all extension professionals who work with producers within Reef water quality practice change projects. It is important to keep in mind that while building rapport with an agricultural producer is foundational to achieving practice change, if the relationship is only supportive and connected it is likely to be ineffective without clear outcomes for change. Delivering the PoP survey, or something similar, can help keep the change practice elements of the EMOP front of mind when building a relationship and working with a producer.

## Conclusions

The insights from these types of surveys can provide extension professionals with a practical way to consider producers' perceptions of practice change. Building relationships and understanding of agricultural producers are the foundational steps to effectively working with producers and implementing the EMOP. Monitoring, reflecting and reviewing are also key steps in making sure that the extension approach is fit for purpose (Williams et al. 2021). If not conducted in a systematic way, it can be easy for assumptions and biases to creep into the picture of who a producer is and what approach is likely to work for them. The PoP survey can help address these implementation steps adding a tool to the extension toolbelt.

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