

Not just practice change – using KASA based evaluation to demonstrate project impact

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Abstract. A key challenge faced by extension projects is to design and implement effective feedback collection processes to improve service delivery and demonstrate impact to funders. We used standardised evaluation forms with questions relating to the KASA (Knowledge, Attitudes, Skills and Aspirations) framework to capture impact on key precursors to practice change. Attendee feedback was documented at the end of each extension activity. Grower feedback highlighted opportunities to enhance service delivery while also generating powerful quantitative and qualitative data about the impact of the project on KASA. This information was used to inform the design of activities in the latter part of the project. The data discussed in this paper is collated feedback from all project activities over a three-year timeframe of 2019-2022. A key outcome was 60% of attendees indicating they are planning on implementing a practice change within the next 12 months because of the information provided.

Keywords: KASA, practice change, evaluation, extension, grain producers, reef water quality

Introduction

The Embedding Grains Practice Changes in Reef Catchments project (hereafter referred to as the project) was delivered by the Sustainable Grains Practices team, and aimed to promote and measure improvement of on-farm practices that influence runoff water quality from cropping land. The project was based within the Great Barrier Reef catchments of the Fitzroy, Burnett, and Burdekin River and funded by the Queensland Department of Environmental Science, and the Queensland Department of Agriculture and Fisheries.

To achieve these practice changes that improve water quality, each region's priorities were identified through grower consultations, relevant extension and training activities were delivered, and their impact on producer's knowledge, attitude, skills, and aspirations (KASA) was evaluated. Follow up support was then provided to assist growers along the practice change continuum. Finally, on-farm practice changes were reported to the Paddock to Reef (P2R) projector app. The project reported on individual grower practices that are having the greatest impact on reef water quality based on the Grains Water Quality Risk Framework (GWQRF) provided by P2R. These practice changes relate to farming practices from the GWQRF that impact on water run off quality. More specifically, pesticide, nutrient, and sediment suspended in runoff water leaving cropping fields and entering waterways that flow to the Great Barrier Reef. The project also examined its impact on change in growers' practices and the intent to change practices in the future. As extension officers we aim to influence the attitudes, opinions, and skills of growers to encourage adoption of improved practices.

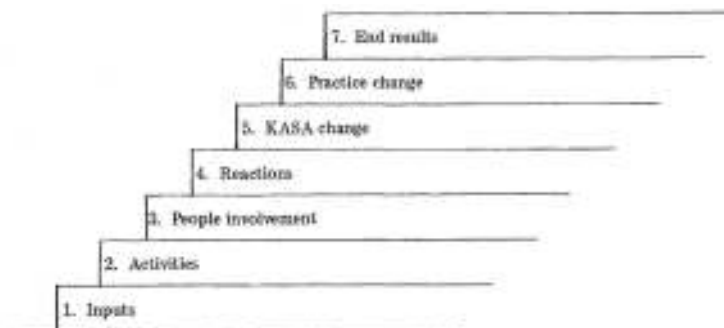
The project had a commitment to report annually on the impact of project intervention on grower's practice change. However, it is very challenging to demonstrate the impact of project activities, if this has to be shown by an on-farm change associated with a significant lag time. On-farm practice changes are often time consuming and costly, which causes lag times in practice change uptake. Climatic conditions, economy of scale, competing business priorities, labour shortages, market demands, and volatility in agricultural inputs, all at times play a role in the inability for a farming business to improve practices. This therefore impacts on a project's ability to demonstrate impact to funders as reporting solely on number of hectares, and types of practice changes can lag to the outer years of the project and in some cases following projects.

Given successes in previous work, the project decided that continuing to use KASA based evaluation data was the most suitable solution. This process provided the additional benefit of capturing attendee feedback to improve service delivery and generate valuable quantitative and qualitative data. Capturing and reporting data based on the knowledge, attitudes, skills, and aspirations of attendees enabled the project to report the impact of project activities on growers' attitude towards a practice change in a more efficient way and shorter period of time. The approach also allowed the reporting of several of the steps in the change process which eventually result in a change in practices, effectively demonstrating project impact over a longer timeframe. This goes some way towards addressing the difficulty in addressing the lag time from awareness through to implementation of a new practice as outlined above.

Bennett's hierarchy model (Figure 1) shows seven categories for evaluating project impact and influencing changes in practice. Step five in the hierarchy is KASA change, (Knowledge, Attitudes, Skills, and Aspirations). To achieve practice change Bennett (1975), p. 7 stated that 'Practice

change occurs when people apply their KASA change to working and living'. KASA has been identified as necessary precursors to change and as such were chosen to be one of the two key evaluation methods for the project. The other main method being the water quality impacts associated with on ground practice changes measured and modelled by other projects as part of the broader reef program.

Figure 1. Bennett's hierarchy of evidence for program evidence



Source: Bennett 1975, p. 9.

In the KASA framework, knowledge is based on the improvement of one's knowledge and learned information or accepted advice, relating to either economic, social, or environmental factors of the practice. Attitudes relates to the thoughts, feelings, and opinions on the topic. Skills focuses on the ability, either physical or mentally, to undertake the change. With aspirations relating to the intentions, desires, or ambitions to conduct the change (Rockwell & Bennett 2004).

Methodology

The project's impact on the KASA of attendees was captured through standardised anonymous evaluation forms which were handed out at the end of each extension event. The evaluation form contained seven questions, four questions addressed KASA to measure the precursors to practice change, with the remaining three questions addressing attendee satisfaction to assist the projects continuous improvement process. The form contained multiple choice and open-ended questions which allowed attendees to add extra comments and suggestions where needed.

The evaluation questions were worded to allow them to be used for several different types of extension events including workshops, field days, and training activities. This allowed the continuity of data, which provided an opportunity for all event data to be combined into regional, annual, and end of project reports.

The evaluation forms were in paper form for several reasons including, lack of phone signal at many of the venues, sometimes limited technological knowledge from attendees, along with the written comments providing invaluable quotes and data that is often not received with digital evaluation.

The following questions were asked during the evaluation process:

- Q1 – How would you rate the following aspects of the event? (Rated 1 = poor, to 5 = Excellent)
 - The event overall
 - Relevancy and practicality of the event
 - Value of guest speaker/s in delivering relevant information
 - Duration of event
 - Timing of event.
- Q2 – Was the information provided during this event detailed and practical enough to help you understand the topic and the implications it might have on your property?
- Q3 – Has participation in this event encouraged you to think about changes to the way in which you might undertake activities on your property to improve productivity and/or farming efficiency?
- Q4 – As a result of today's event, how confident are you in making management decisions in your business that relate to the information discussed?
- Q5 – Are you planning on implementing any change to your business in the next 12 months as a result of the knowledge and information you acquired at today's event?
- Q6 – Are there any comments or suggested improvements you would like to make about the event?
- Q7 – What topics and issues would you like to be addressed in future workshops/field days/events?

After each extension event/series a post event report was written which detailed the topic covered, process undertaken, the results and the interpretation from evaluation forms, and opportunities for future improvement. This provided a formal method to capture details and inform the way future events were run. An excel spreadsheet template was developed to enter and store the evaluation data and allowing data to be graphed. These graphs had a standardized design and were used in all project reports. Feedback from evaluation forms was used to inform the project's continuous improvement process and adjustments were made to delivery as required.

The project used another method to demonstrate the aspirations aspect of KASA called an enterprise plan. This process was completed during one-on-one property visits. The data collected through enterprise plans provided a benchmark of farming practice for the enterprise and gave producers an opportunity to discuss their business with an independent individual. The enterprise plan document is focused on the outline provided by the GWQRF designed by P2R to ensure project targets were achieved. A part of this process captured a growers intended change topics and a plan was developed in consultation with the enterprise owner or manager, to identify support opportunities. These were where changes in on-farm practices could occur to improve enterprise environmental and economic sustainability. This process focused on how the project could provide support to accelerate the adoption of these improved practices.

As a final impact metric for the project, staff can report on-farm practice changes from those growers that the project engaged with in the enterprise plan process. The before and after practice level, location of, and hectares of change were reported, which provide the ability for the Projector App within P2R to estimate the tonnes of fine sediment reduction at the end of catchment point. This data is highly valuable as it shows the on ground environmental impact the project has had at a catchment level. The app calculates the tonnes of fine sediment reduction estimated from undertaking the practice change and an excel export of the modelled data enables soil loss from fields and soil entering waterways to also be calculated.

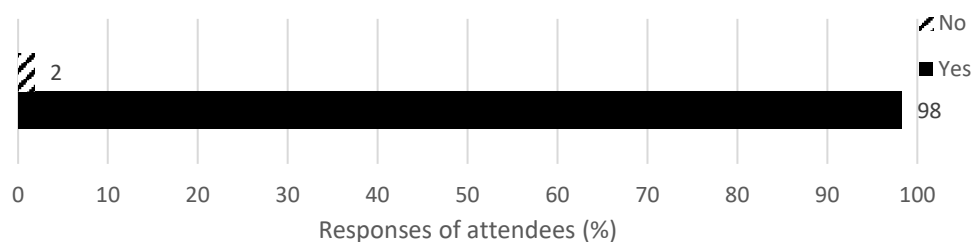
Phase one of the project ran from 2017-2022. Within this timeframe, 45 extension events were run throughout the Central Queensland reef watershed. These events gathered evaluation data from 717 attendees in total (as many people attend multiple events) with 275 of those attending at least one event. These attendees represent 183 farming enterprises and manage 346,749 hectares of cropping land. The data discussed in this paper is collated feedback from all project activities for the three years from 2019 to 2022.

Results and discussion

KASA questions

Response of attendees on the improvement of their knowledge A high proportion of attendees (98%) agreed that the information provided in extension events improved their knowledge (Figure 2). This high percentage level can be supported by comments such as 'yes, we received information to take us further in our endeavours' and 'greater knowledge of how to develop a plan'. In the event design process of all activities the project delivers, there are clear set aims and outcomes which align to practice change. The data shows the information delivered at the events were very well targeted and addressed the knowledge aspect of KASA. In any extension type activity, there is always a possibility that attendees will not receive the particular information they are after. There were no comments received that indicated the why for the two percent stating no.

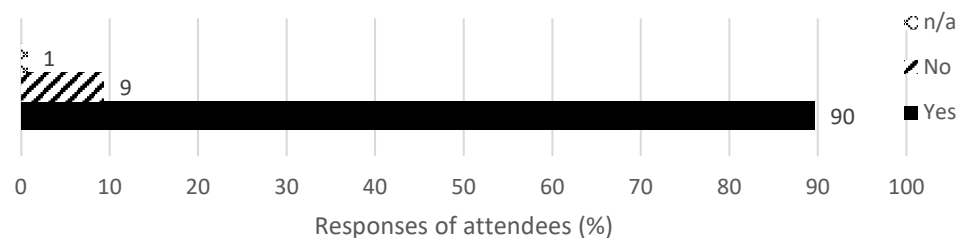
Figure 2. Response of participants to the knowledge question: 'Was the information provided during this event detailed and practical enough to help you understand the topic and the implications it might have on your property?'



Response of attendees on their attitudes Figure 3 shows 90% of attendees agree that the event encouraged them to think about their attitudes and thoughts on the event topic. This percentage response can be further supported by comments such as 'it has made me realise what is

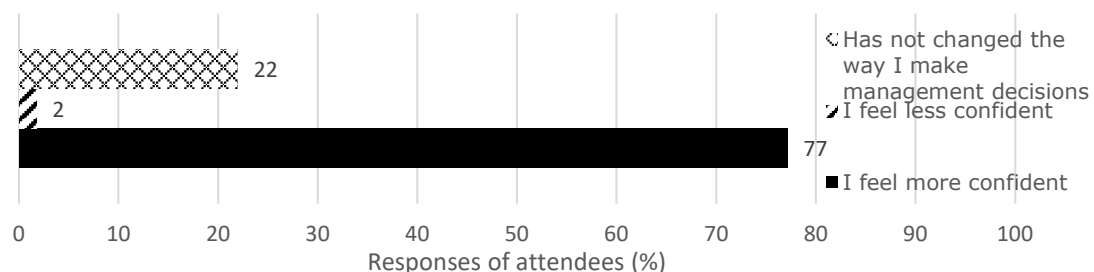
achievable' and 'Must get soil test! And reconsider fertiliser strategy'. These comments show the events were successful in prompting changes to attendee's attitudes on the topics. The nine percent indicating no can be explained by comments such as 'already trying different methods' and 'need time to consider'. These types of responses show that either attendees are already undertaking the practice and attended just for more information, or they will need time to contemplate the information they received on the day. This shows the event either confirmed they are on the right track or provides an opportunity for further follow up support.

Figure 3. Response of participants to the attitude question: 'Has participation in this field day encouraged you to think about changes to the way in which you might undertake activities on your property to improve productivity and/or farming efficiency?'



Response of attendees on increasing their skills The skills question posed some difficulty, as not all events aimed to improve grower skills. The project focused on two different types of events: information based which aimed at improving growers' knowledge on a topic so they would think about making a change, and training events that taught attendees skills needed to implement changes. As we required the questions to remain consistent among all events delivered, the skills question was worded in a way that could capture the confidence development from either providing the knowledge needed to understand a change or teaching the skills to implement the change (Figure 4).

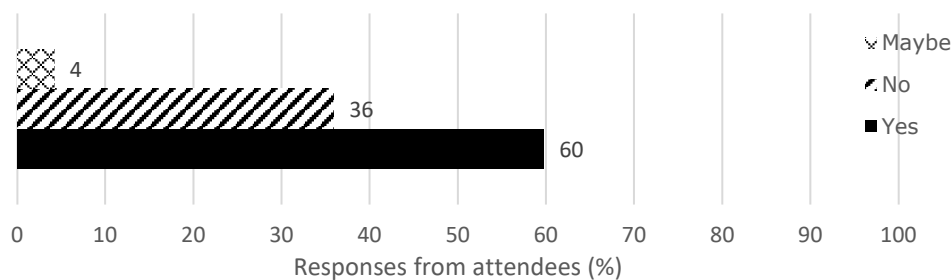
Figure 4. Response of participants to the skills question: 'As a result of today's field day, how confident are you in making management decisions in your business that relate to the information discussed?'



Seventy-seven percent agreed that the events improved their confidence to make a management decision. Depending on the aim of the events (knowledge or skills) dictates the kind of response received. Responses were recorded such as 'more confident to attempt to rectify erosion issues', 'check water widths' and 'by understanding the formulas (to conduct a nitrogen budget)' shows the event improved their skills needed to make a practice change. Twenty-two percent of participants stated that the event did not change the way they make management decisions. This response could be further explained by attendees who stated they 'are on the right track' and 'I am comfortable where we are at the moment'. These kinds of responses are still considered a positive outcome as they show the event confirmed attendees are doing the right thing and will reduce the risk of using poorer practices in the future. The responses under the skills component of KASA depended mainly on the topic of the event. Many participants responded that they want to make a practice change but due to the lack of financial ability particularly from drought, they cannot make a practice change at this stage. They also stated they need more information on the topic to consider a practice change. The two percent being 'less confident' is based on attendees now understanding the topic is more complex than originally thought. These attendees are an opportunity for further one-on-one or small group support sessions.

Responses of attendees on aspirations to change Figure 5 shows that 60% of attendees are planning on implementing a change in the next 12 months. This is arguably the most important part of KASA because the response provided an understanding of the growers' intention to make a change in their farming practices before the actual change is undertaken. The majority of the comments made for this question relate to the change the attendee is intending to make, with the change most often relating to the topic of the event.

Figure 5. Response of participants to the aspirations question: 'Are you planning on implementing any change to your business in the next 12 months as a result of the knowledge and information you acquired at today's event?'



The result from the respondents showed that the event overall provided the information leading to make a practice change in future. Of the responses, most are undertaking the full change, and some are stating that the event will further inform a change they are already in the process of. For example, 'Redesign of now obsolete banks' and 'Continue bank maintenance/waterway management'. The four percent of responses to maybe can be explained by comments such as 'possible - depending on cost etc'. Thirty-six percent of attendees stating no comes from a variety of different reasons such as, costs involved or lack of cash flow, needing to consult with other business partners, they have already made the change and were seeking further information, or they needed additional information to commit to the change. A number of the no responses were backed up with comments such as 'Probably not (maybe over 5 years)' and 'Will consider over the next 2 years subject to finances'. These responses show the 12-month timeframe of this question was too short for the attendee to commit to a change within that timeframe, but they are aiming to in subsequent years.

Attendee satisfaction questions

The three satisfaction questions delivered very informative results. Question one was used to gain an understanding of the attendee's opinion on the way the event was run, on average it rated 4.3 out of five. This result shows a high level of attendee satisfaction. Question six received a high number of participants responding with a no/nil meaning no comment or a 'good job today/well done'. These types of comments are always helpful and show the attendees enjoyed the day and the event was well tailored to the wants and needs of the region. Other comments were specific to the event topic and related to further information the attendee was after or ways they think the events could be improved. These comments provided helpful improvement suggestions. Question seven showed; 'improved understanding on plant nutrition' was mentioned by maximum participants followed by soil and erosion management, and pesticide application. An opportunity was provided for attendees to provide other suggestions on topics. These were collated and used to further inform grower consultation processes.

The enterprise plan process gathered planned change topics from 94 discussions with growers. The discussions highlighted 217 total planned change topics, with many growers raising multiple interests (up to five per grower). For the purposes of the projects aims, these topics were split up into sediment, nutrient, and pesticide related topics based on the WQRF. Seventy-four were based around sediment control, 42 on nitrogen-based practices, and 41 on pesticide reduction. Sixty topics were raised that didn't relate to one of those key project deliverables. This method of assessing aspirations provides an additional level of data to be used in predicting, supporting, and achieving practice change. It also provides the ability to follow on from the event attendees that indicated they wanted to make a change but had further barriers to adoption to overcome. Extension staff can then develop a tailored plan and assist that enterprise along their practice change continuum.

How did KASA data relate to on ground practice change?

From 2019-2022 the project reported 93 on-farm practice changes covering 82,426 hectares of cropping land. These changes were all reported to the P2R projector app. Of these 93 changes,

58 were sediment related changes and 38 of these were able to be modelled, which predicted a reduction of 445 tonnes of fine sediment from entering the Great Barrier Reef. In addition to this, 18,687 tonnes of soil were prevented from leaving farms and entering local waterways.

Sixty percent of extension event attendees stated they would make a change (Figure 5). On-farm practice change monitoring data shows knowledge, attitude, and skills barriers were overcome 93 times and changes were achieved. The other 36% of attendees who said maybe (Figure 4), will not be ready to make a change until they overcome their barriers to adoption which extension efforts cannot always address.

Learnings

There were many valuable learnings achieved from the KASA data collected. The data was used to inform future project processes and changes were made to evaluation forms, and some of the delivery processes. The data collected in the KASA evaluation form provided a key metric for the project to report and better describe impact. The comments gathered, provided invaluable context which turns the data from just quantitative numbers to include qualitative insights to better understand the why and further interpret the data. For this reason, the evaluation form process will remain in paper format to ensure this data continues to be collected to the same level. Getting the right wording of the KASA questions is very important as this can dictate the kinds of responses received. The aspirations related question asked growers if they are planning on implementing a change in the next 12 months. From the comments received under some of the no answers stating they would not in the next 12 months but would in the next two to five years made us aware we potentially missed out on capturing some longer-term practice change intentions. To address this, a second yes option has been added stating: yes, sometime in the future. This hopes to capture those who have barriers for adoption that we extension professionals cannot assist with. Apart from this small change, other KASA based questions remain unchanged to allow the continuity of data which is very valuable to the project.

Attendee satisfaction questions were modified, as they were too general to provide useful feedback to make delivery improvements. It was realised the continuity of data did not provide enough added benefit to maintain a general approach. Satisfaction related questions had specific requests added about length of the event, and now have topic and speaker names which provides the opportunity to gather more detail on speaker value and level of satisfaction on the information delivered. This was changed from an overall event question to topic specific as many events include multiple different topics. Question seven on future topics of interest was combined with question six to form a comments or improvements and future interests' question. An additional question was added which asks: What is the most important thing you will take away from today's event. This question will allow staff to monitor the aims and outcomes of the day matched what attendees took away from the event.

Conclusion

Overall, feedback indicates project activities have had a positive impact on the knowledge, attitude, skills, and aspirations (KASA) of growers who engaged with extension activities. Ninety percent of attendees believed that participation in project extension events encouraged them to think about making a change on their property, with 60% indicating they were planning on implementing a change in the next 12 months resulting from the knowledge and information acquired at project events. Seventy-seven percent also reported being more confident in making management decisions relating to the topics presented as a result of attending project events.

As a result of the KASA data collection, using numbers and comments allowed the project to demonstrate its impact quantitatively and qualitatively on critical precursors to practice change. This allowed the project to demonstrate its impact more accurately to funders without being limited by barriers to adoption which cannot be assisted by extension efforts.

The project has been refunded for a further five years (2022-2026), with the learnings from phase one incorporated into phase two of the project. KASA data will continue to be collected in evaluation forms at extension events and used to demonstrate the project impact to funders.

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