Smartcane BMP – understanding drivers and building momentum for best management practice uptake in the Queensland sugarcane industry

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Abstract

The Smartcane Best Management Practice program (Smartcane BMP) was launched in 2013 to assist Queensland sugarcane growers document, benchmark and continuously improve their on-farm practices for productivity, profitability and stewardship. Current uptake represents over half the area under cane production in Queensland (200,000 ha). CANEGROWERS wanted to understand what drivers were important for Smartcane BMP adoption. Smartcane BMP was developed to meet the multiple drivers for sustainability – farm productivity, business profitability and compliance with government regulations. This includes practice change to improve water quality draining into the Great Barrier Reef Lagoon, community expectation and market access requirements of sustainably produced sugar by buyers and end-users. Initial drivers for adoption were reviewed from the engagement process used to develop Smartcane BMP. Aggregated data of grower engagement was reviewed from the Smartcane BMP database between December 2013 and February 2016. Information for program engagement came from two independent reviews of Smartcane BMP. The political drivers and policy relating to the Great Barrier Reef were examined. Grower case studies and experiences of Smartcane BMP facilitators were also considered. Engagement by growers in the benchmarking component of Smartcane BMP was steady, yet reasons for uptake varied based on perception and understanding of the program, grower attitudes, access to support and government policy. Accreditation in the Smartcane BMP program started to occur in the later part of 2015 and rose sharply in 2016. This was strongly influenced by program communication, facilitator engagement and early adopters wanting to meet community expectations. There is no one single driver for engagement in Smartcane BMP, rather a mix of reasons depending on a grower’s personal perceptions, business drivers, access to support and connectivity to the community and industry. Intrinsic motivators are crucial for long-term adoption. Successful engagement requires positive messaging, active facilitator support and understanding of the growers’ values.

Key words

Smartcane BMP, best management practice, Great Barrier Reef, water quality, market access

INTRODUCTION

The Queensland sugarcane industry farms adjacent to the World Heritage Listed Great Barrier Reef (GBR). The GBR stretches 2,300 km and extends south from the northern tip of Queensland in north-eastern Australia to just north of Bundaberg (GBRMPA 2016). Due to the Queensland sugarcane industry’s proximity to the GBR, the industry faces significant environmental and sustainability scrutiny and now operates within a complex policy and regulatory setting that involves both the Australian and Queensland Governments.

Australia’s sugarcane is grown in high-rainfall and irrigated districts along coastal plains and river valleys on 2,100 km of Australia’s eastern coastline. In Queensland the industry occupies about 2% of the coastal catchment and accounts for about 95% of Australia’s raw sugar production (CANEGROWERS 2015). 89% of sugarcane is grown on family-owned farms under 250 ha in size (Valle & Martin 2015). While some farms harvest more than 100,000 t of sugarcane, the average grower produces 8,000 t (CANEGROWERS 2015a). The sugarcane harvest begins in May in northern Queensland and ends in late December in southern Queensland. The period between January and May is generally more favourable to grower engagement.

Each year, over 30 Mt of sugarcane is supplied to Australia’s 24 sugarcane mills by more than 4,000 cane-farming businesses. The Australian sugar industry is a low-cost producer and the world’s third-largest raw sugar exporter after Brazil and Thailand (CANEGROWERS 2015a). With approximately 80% of the country’s sugar exported, the remaining 20% of sugar produced is sold on the domestic market.
The Smartcane BMP program

The Smartcane Best Management Practice program (Smartcane BMP) is an industry-led, voluntary program available to all sugarcane growers across the state of Queensland. Smartcane BMP was developed with funding from the Queensland Government and was launched in 2013 to assist growers to document, benchmark and continuously improve their on-farm practices for productivity, profitability and stewardship.

There are multiple drivers for the Smartcane BMP including farm productivity, business profitability, compliance with government regulations and policy, practice change to improve water quality for the GBR, meeting community expectations to maintain the social licence to operate and market access requirements of sustainably produced sugar by buyers and end-users of sugar. CANEGROWERS wanted to understand which of these drivers were important for adoption to ensure effective delivery and program improvement.

Smartcane BMP consists of seven modules and supports a holistic approach to growing cane that addresses whole of farm operations. The first three modules are considered core modules for the program and practices within these modules address cane production and water quality improvement.

1. Soil Health and Nutrient Management (core).
2. Irrigation and Drainage Management (core).
3. Weed, Pest, Disease Management (core).
5. Farm Business Management.

Smartcane BMP houses the modules online (www.smartcane.com.au) supported by a database, record keeping platform and record keeping tools. Each module contains key areas relating to the module’s theme and a list of practices within that key area. The practices are ranked ‘Below Industry Standard’, ‘At Industry Standard’ and ‘Above Industry Standard’ and are categorized depending on ability to improve productivity, profitability and stewardship.

Smartcane BMP has a network of 14 district facilitators to support growers’ engagement in the program. The program also links to industry extension, training and government funding programs.

The Smartcane BMP process

Smartcane BMP encourages growers to become accredited in the program. Accreditation in Smartcane BMP is underpinned by ISO 19011: Guidelines for quality and / or environmental management systems auditing.

A grower registers, creates a username and password and provides contact and farm details. The grower then completes the benchmarking step through a self-assessment process in the respective modules. Growers are guided to focus on the core modules first and are encouraged to complete all seven modules. At the conclusion of the process, the grower will have evaluated their business and identified possible gaps for on-farm improvement, extension advice, products and training.

On completion of benchmarking, the grower is encouraged to progress to accreditation. This requires the grower to provide records and information that can demonstrate how they meet the respective practice in each of the modules. Once this information is collated, an audit of the information is undertaken by an independent auditor funded through the program. A successful audit provides the grower with a five-year Smartcane BMP accreditation. To ensure rigour and transparency, accredited growers are subject to an annual independent third-party audit.

Market access and sustainable sugarcane

There are similar programs in other sugar growing regions in the world. Bonsucro offers a metric-based certification scheme for the sugarcane sector that focuses on sustainability and continuous improvement (Bonsucro 2016). Czarnikow have developed THRIVE, a sustainable sugar programme that supports continuous improvement across the entire sugar supply chain (Czarnikow 2016). SUSFARMS is a South African framework designed to assist growers in the implementation of practices that are either legal requirements or better management practices (SASA 2015). The Brazilian Sugarcane Industry Association (UNICA) supports Bonsucro and has 33 Brazilian mills certified (UNICA 2016).
Sustainability requirements for market access are starting to emerge for Australian local and international sugar markets. End-users and manufactures, including the Coca-Cola Company, Unilever and PepsiCo, have developed corporate social responsibility policies to source sustainable sugar used in their products by 2020 (Coca-Cola Company 2016; PepsiCo 2016; Unilever 2016). The market-access drivers are influenced by the policy of some NGOs to create market transformation change (WWF 2015), as well as consumer pressure wanting to know where their food comes from and how it is produced.

The Coca-Cola Company has made a public commitment to source 100% of its sugar from sustainable sources by 2020. The preferred sustainability certification for the majority of these companies is through Bonsucro. Smartcane BMP has been recognised by Bonsuco as the Queensland best management practice program and work has been undertaken to align Smartcane BMP accreditation with Bonsuco certification.

The health of the Great Barrier Reef

The GBR is deemed to be in poor condition and has lost half its coral cover in the last 27 years (AIMS 2016). The coral loss is due to storm damage (48%), crown of thorns starfish (CoTS) (42%), and bleaching (10%) (De’ath et al. 2012). Declining marine water quality, influenced by land-based runoff, is one of the most significant threats to the long-term health and resilience of the GBR (GBRMPA 2014). The 2013 Scientific consensus statement (Brodie et al. 2013) concludes the greatest risks to water quality are from: nitrogen discharge that is associated with CoTS outbreaks; fine sediment discharge that reduces light availability for seagrass and inshore coral reefs; and pesticides that pose risks to freshwater and some inshore and coastal habitats.

The main sources of excess nutrients, fine sediment and pesticides from GBR catchments are diffuse source pollution from agriculture (Brode et al. 2013; Waters et al. 2014). For sugarcane production, the focus is on sugarcane fertiliser and herbicide use.

The World Heritage status of the GBR is being reviewed by the World Heritage Committee who is considering listing the reef as “in danger”. In 2012, the World Heritage Committee considered a report from UNESCO that stressed the need for stronger action to reverse the GBR’s declining condition (UNESCO 2012). This motivated the Australian and Queensland governments to develop the Reef 2050 Long Term Sustainability Plan (Reef 2050 LTSP) that addresses the World Heritage Committee’s concerns (Department of Environment 2015).

In June 2015, the World Heritage Committee released its findings, recommending that the GBR not be placed on the ‘World Heritage in Danger’ list but clearly requesting that all commitments under the Reef 2050 Plan be implemented with a progress report in 2016 (UNESCO 2016). The most significant target for sugarcane is improving water quality by reducing dissolved inorganic nitrogen loads in priority areas by at least 50% by 2018, on the way to achieving an 80% reduction in nitrogen loads by 2025 (Department of Environment 2015).

The Reef Water Quality Protection Plan (Reef Plan) preceded the development of the Reef 2050 LTSP and is a partnership agreement between the Australian Government and Queensland Government. Reef Plan has actions and targets to improve water quality and enhance the resilience of the GBR. Reef Plan 2013 set a target of at least a 50% reduction in anthropogenic end-of-catchment DIN loads in priority areas across the GBR (Department of Premier and Cabinet 2013).

To help achieve the Reef Plan targets, the Australian Government implemented an incentive based funding program called Reef Programme (formally Reef Rescue). This program provided grant funding to growers to improve practices to improve water quality and support innovative practices (Australian Government 2016).

In contrast, the Queensland Government passed the Great Barrier Reef Protection Amendment Act 2009 that was designed to reduce nutrient and chemical run-off to the GBR. The legislation and associated regulations (Reef Regulations) affected sugarcane growers between Mossman and Mackay, regulated an optimum amount of fertiliser to apply on farm, mandated record keeping on soil testing results, chemicals and fertilisers application, and required growers who farmed over 70 ha in the Wet Tropics region of Queensland to develop Environmental Risk Management Plans (Australasian Legal Information Institute 2016).

CANEGROWERS, an industry peak body representing 80% of the sugarcane growers in Queensland, successfully lobbied to establish the Smartcane BMP program instead of supporting the regulatory approach. In 2012, the Queensland government provided funding to CANEGROWERS to develop Smartcane BMP, which was underpinned by grower
engagement targets that would give the government confidence to reduce the scope of the Reef Regulations. The targets were 1,520 growers completing self-assessment and 380 of the 1,520 growers achieving accreditation by the end of 2014.

During 2013-2016, the Queensland Government had changed twice. Both parties, when in power, supported Smartcane BMP, but the Reef Regulations were not strictly enforced during 2013-2015. The elected Government in 2015 intended to enforce the Reef Regulations and introduced new water-quality targets to reduce nitrogen by up to 80% and sediment by up to 50% by 2025 in key catchments across the GBR (Australian Labor Party 2015).

METHODOLOGY

CANEGROWERS reviewed benchmarking and accreditation data from the Smartcane BMP database between December 2013 and March 2016. These data were analysed and graphed to identify trends of engagement over time.

CANEGROWERS revisited the drivers for engagement from the initial consultation process in 2013 used to develop Smartcane BMP and reviewed reports on engagement from two independent reviews of Smartcane BMP. The Smartcane BMP Program Evaluation and Review (GHD 2014) was commissioned to evaluate and review the initial phases of the Smartcane BMP program and identified barriers to adoption. Key evaluation questions were developed and data was collected using a combination of desktop review of program documentation and face to face and telephone discussions with key BMP contacts.

The Smartcane BMP Perceptions Audit: Final Report (Sefton 2015) was commissioned to understand the current situation regarding cane growers and Smartcane BMP and to identify triggers and barriers to Smartcane BMP uptake. The review involved rapid appraisal interviews with four industry experts, and interviews with 60 sugarcane growers and 20 industry personnel involved in the sector in Queensland.

The experiences of the Smartcane BMP facilitators and accredited growers were also evaluated through feedback and review of accredited grower stories in the Australian Canegrower magazine.

CANEGROWERS also examined the market access, political motivations, government policy and reef programs relating to the Great Barrier Reef between 2009 and 2016.

RESULTS AND DISCUSSION

It is clear that The World Heritage Status of the GBR is one of the highest priorities for the Australian Government and places considerable pressure on the sugarcane industry’s use of nitrogen. Water-quality improvements targeting nitrogen and chemical use are also central to government programs, policy and regulations and influence the drivers of Smartcane BMP.

Water-quality improvement is modelled through the Paddock to Reef Integrated Monitoring, Modelling and Reporting Program (P2R) and works by collecting and integrating data and information on agricultural management practices, catchment water-quality monitoring, catchment indicators, catchment loads and the health of the Great Barrier Reef (Australian Government and Queensland Government 2016a). The outcome from P2R is to measure and report on progress towards the Reef Plan targets through annual Reef Report cards.

CANEGROWERS worked with the P2R modellers to provide a mechanism for aggregated data to be included in the modelling and future Reef Report cards. This allowed water-quality outcomes resulting from practice change in the Smartcane BMP program to be measured.

In the 2012 and 2013 Reef Report Card, results show modelled annual average pollutant loads entering the GBR had reduced significantly (Department of Premier and Cabinet 2014). In the 2014 Reef Report Card, the overall trend in water quality was improving and the cane industry played a significant role in that outcome. The Report Cards showed the need to accelerate the rate of practice change and drive innovation to meet the ambitious water quality targets (Australian Government and Queensland Government 2016b). The message from government was that adoption was not happening fast enough and sugarcane was the industry with the most work to do. Smartcane BMP data was not included in the results of these three report cards due to the program being newly established.
The initial consultation process in 2013 used to develop Smartcane BMP identified that focusing on productivity and profitability were important drivers for farming businesses (CANEGROWERS 2013). Removing the Reef Regulations by meeting the initial grower engagement targets seemed to be the highest priority from organisations representing growers, but the targets for self-assessment and accreditation were not met and growers themselves took more of a wait-and-see approach based on the policies of the government in power. This was supported by the benchmarking and accreditation numbers (Figs 2-3), as well as feedback from growers and Smartcane BMP facilitators.

The GBR provides a strong election platform and the changes in power of the Queensland government reflected community sentiment around the GBR. Meeting the social licence to operate and responding to community expectations by showing how growers meet their environmental obligations was also identified in the 2013 consultation process. These drivers continue to be identified by Smartcane BMP facilitators and growers.

Intrinsic motivators, e.g. “I’m doing this because I want to and I can see the benefits to me, my family, my farm, the community and the environment”, are crucial for long-term adoption, as opposed to extrinsic motivators such as regulation. The intrinsic motivators are starting to come through in grower case studies published in the Australian Canegrower. Examples such as “When we cop criticism, we can now put this up as proof we are doing the right thing as an industry,” (CANEGROWERS 2015c) and “We did Smartcane BMP to be as cost efficient per unit of production as we can while at the same time looking after the environment” (CANEGROWERS 2016c) demonstrate growers are seeing the drivers for themselves.

The GHD review (GHD 2014) identified that the communication and engagement strategy was proving effective at raising general awareness of the program, but growers were failing to see the benefits of participation and particularly obtaining accreditation. There was no single strong driver for grower adoption or participation, yet a number of drivers were identified including the opportunity to encourage others, the ability to demonstrate industry credentials, the opportunity for industry to be proactive, improved farm management and potential market opportunity.

A number of barriers to grower adoption and participation in Smartcane BMP were identified including complacency, lack of time and resources, reluctance to attend workshops, the process was too hard, no perceived benefits to individual growers, ‘battle fatigue’ relating to the various reef programs and government policy around the GBR, lack of scientific evidence for both science relating to water quality and recommended practices. The requirement for growers to produce detailed evidence to prove their current management practices before gaining accreditation was considered far too onerous and growers questioned the relevance of some of the evidence required.

The review by Sefton and Associates (Sefton 2015) reported the overall perception of the Smartcane BMP program was more positive than expected as initially indicated by industry. The major barriers to Smartcane BMP were: Inertia – not finding time, not getting around to it or wanting it to be personally introduced to them; Disengagement – not emotionally engaged because there is no sense of urgency; Unaware/disbelieving of some of the core business benefits – such as higher productivity, potentially greater access and better prices; Environmentally disengaged – don’t believe the reef’s health is their responsibility; Cynicism – reject outside influences or reject advice.

The study showed that most sugarcane growers surveyed had a good understanding of the goal and purpose of Smartcane BMP. 45% of the growers in the sample said they were changing farming practices in response to Smartcane BMP, but only 25% believed Smartcane BMP would mean a better price for their sugarcane.

Growers surveyed agreed on most environmental issues, including the fact that they are responsible for pollution off farm. However, they were divided on the need for government regulation and 53% believed it was not necessary (Fig. 1).

The Sefton report recommended that it was critical that the key initiatives of the program are clearly articulated to focus on the growers’ triple bottom line and communicate how these changes benefit or impact their businesses. The report also identified that leadership and industry advocacy need to be included in the program, particularly from growers who represent the interests of growers in the regions. This point has been recognised by Smartcane BMP facilitators and from grower case studies “Firstly, if you’re going to stand up in front of growers and tell them they should do it, you should do it yourself” (CANEGROWERS 2016b).

The results show no statistically significant correlation between age and the uptake of Smartcane BMP. This was also supported in a case study of an older grower in Herbert River “I had to do it just to prove that I was not a dinosaur and even the old dinosaurs can comply with all the new rules and regulations” (CANEGROWERS 2015b).
Aggregated data of grower engagement in the program was reviewed from the Smartcane BMP database between December 2013 and February 2016. The benchmarking data (Fig. 2) indicated a steady rate of engagement in the program between January 2014 and March 2016. This can be attributed to the communications strategy for the program that was delivered during the period. The trend line also reflects that engagement is higher outside of the harvest period (January to May). The timeframe between January 2014 and March 2014 is reflective of the program launch. The period between September 2015 and December 2015 showed a steep increase in benchmarking and can be attributed to the several influencers including the reemphasis of Reef Regulations by the current Queensland Government, grower awareness of market access requirements, and the acceptance of the program by sugarcane growers.

Accreditation in the Smartcane BMP program started to occur in the later part of 2015 and rose sharply in 2016 (Fig. 3). This was strongly influenced by program communication, facilitator engagement and early adopters wanting to meet
community expectations. However, it is also a reflection of growers’ understanding the requirements of accreditation, the maturity of the program, awareness of the reintroduction of Reef Regulations and industry acceptance of Smartcane BMP.

Fig. 3. Accreditations in the Smartcane BMP program between January 2014 and March 2016.

End-users of sugar are also needing a social licence to operate to meet the sustainability expectations of their consumers. This requirement is passed onto the Queensland sugarcane growers. Meeting the sustainability needs of end-users of sugar to sell Queensland sugar on the export market is a driver for the Smartcane BMP program. However, whether or not a price premium will be paid for sustainable sugar, is uncertain. This emerging driver for Smartcane BMP is recognised in case studies “With BMP it’s not just about what you are doing today. A lot of it is about where we want to be in the future – if there is a premium to be paid on accredited sugar, I want to be a part of that” (CANEGROWERS, 2016a).

CONCLUSIONS

There is no one single driver for engagement in Smartcane BMP, rather a mix of reasons depending on the grower’s personal perceptions, government policy, business drivers, access to support and connectivity to the community and the industry. The recognition of grower actions through data will influence government policy and community sentiment. Support of a price premium for sustainable sugar would be beneficial to uptake. Intrinsic motivators are crucial for long term adoption. Successful engagement to build momentum in best management practice programs requires flexibility in the program, positive messaging, active facilitator support, understanding of the growers’ values, evaluation and importantly time.

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REFERENCES

Smartcane BMP – comprendre les facteurs qui influencent et encouragent l’acceptation continue des meilleures pratiques de gestion dans l’industrie cannière du Queensland

Résumé. Le programme ‘Smartcane’ des Meilleures Pratiques de Gestion (Smartcane BMP), a été lancé en 2013 pour aider les producteurs cannisiers du Queensland à régulièrement se documenter sur les pratiques culturelles, à les comparer et les améliorer pour accroître leur productivité et rentabilité. L’utilisation courante de ce programme concerne plus de la moitié de la superficie cannière au Queensland, environ 200 000 ha. Le ‘CANEGROWERS’ a voulu cibler les facteurs importants qui motivent l’adoption du Smartcane BMP. Ceci a été développé pour satisfaire ces multiples facteurs qui influencent le développement durable – la productivité agricole, la rentabilité et la conformité aux règlements imposés par les autorités. Ceci inclut le changement de pratique pour améliorer la qualité de l’eau qui se déverse dans les lagons de la ‘Great Barrier Reef’, l’attente de la communauté et les conditions d’accès par les acheteurs et les utilisateurs du sucre produit de manière durable. Dès l’engagement de développer le programme Smartcane BMP, les facteurs influençant son

Mots clés: Smartcane BMP, meilleures pratiques de gestion, ‘Great Barrier Reef’, la qualité de l’eau, l’accès au marché

Smartcane BMP – entendiendo motivaciones y construyendo momentos para el aprendizaje de mejores practicas gerenciales en la industria azucarera de Queensland

Resumen. El programa Smartcane BMP fue lanzado en 2013 para apoyar a los cañeros de Queensland para documentar, hacer sinergias y continuamente mejorar sus practicas en silo para productividad, rentabilidad y seguimiento. La implementacion actual del programa representa mas de la mitad del area con produccion de caña en Queensland (200,000 ha). Los cañeros querian entender que motivaciones fueron importantes para la adopcion del Smartcane BMP. El Smartcane BMP fue desarrollado para cumplir con multiples motivaciones hacia la sustentabilidad – productividad en el campo, rentabilidad en el negocio y cumplimiento con las regulaciones de gobierno. Esto incluia cambios practicos para mejorar la calidad del agua en el drenaje hacia la laguna de la gran barrera de arrecifes, expectativa de la comunidad y requerimientos para acceso a mercados para el azucar producida con sustentabilidad, exigencias de los compradores y usuarios finales. Motivaciones iniciales para la implementacion fueron revisados desde el proceso de compromiso utilizado para desarrollar el Smartcane BMP. La informacion acumulada respecto al compromiso del cañero fue revisada en la base de datos del Smartcane BMP entre 2013 y febrero 2016. La informacion para el compromiso del programa vino de dos revisiones independientes del Smartcane BMP. La motivacion politica y la politica en relacion a la gran barrera de arrecifes fueron analizadas. Estudio de caso de los cañeros y las experiencias de los facilitadores del Smartcane BMP fueron tambien consideradas. El compromiso de los cañeros en el componente de benchmarking del Smartcane BMP fue continuo, sin embargo las razones para el aprendizaje variaban basados en la percepcion y la comprension del programa, actitudes del cañero, acceso al apoyo y la politica gubernamental. La afiliacion al programa de Smartcane BMP empèzo a ocurrir al final de 2015 y muy al principio de 2016. Esto fue fuertemente influenciado por el programa de comunicacion, compromiso del facilitador y los primeros afiliados queriendo reunir las expectativas de la comunidad. No hay una sola motivacion para comprometerse con el Smartcane BMP, mas bien una mezcla de razones dependiendo de la percepcion personal del cañero, la motivacion de negocios, acceso al apoyo y la conectividad con la comunidad y la industria. Motivadores intrinsecos son cruciales para adopciones de largo plazo. Los compromisos exitosos requieren mensajes positivos, apoyo activo del facilitador y comprension de los valores del cañero.

Palabras clave: Smartcane BMP, buenas practicas gerenciales, arrecife de la gran barrera, calidad del agua, acceso al mercado