



CANEGROWERS



# Cane BMP Monitoring, Evaluation, Data Collection and Reporting System



This project has received  
funding support from the  
Department of Environment  
and Heritage Protection.



## Introduction

The Cane BMP Monitoring, Evaluation, Data Collection and Reporting System (MEDCAR) is designed to support the seven Smartcane BMP modules, practices, assessments and action plans which were the focus of the 14 District Working Group meetings held between February and March 2013.

Following discussions with Cotton Australia (CA) and a review of current contractual obligations between CA and the myBMP MEDCAR consultant, Queensland CANEGROWERS Organisation (QCGO) has been advised that it can procure the services of the myBMP MEDCAR consultant in the development of the Smartcane BMP MEDCAR. The Smartcane BMP MEDCAR has been developed and mirrored on the current CA myBMP MEDCAR and designed to support Smartcane BMP modules, practices, assessments and action plans on a web based format linked to the latest industry science and information.

The MEDCAR is designed to measure growers' progress towards and achieving Smartcane BMP accreditation and will support capabilities for aggregated practice data reporting state-wide, regionally and by district. The MEDCAR will also provide data to support requirements for public reporting, informing and refining extension services, training (see also Smartcane BMP Accreditation System, Training and Competency Framework), RD&E services and facilitator quarterly reports which will also be used to inform other relevant industry programs. See also Smartcane BMP Communication and Engagement Strategy and Communication Plans 1, 2 and 3.

The Smartcane BMP data collection and reporting system will support the following BMP modules, which collectively address all aspects of on-farm operation and include:

1. Drainage and Irrigation
2. Pest, Disease and Weed Management
3. Soil Health and Nutrient Management
4. Crop Production and Harvest Management
5. Farm Business Management
6. Workplace Health and Safety
7. Natural Systems Management

The Smartcane BMP database system supports a basic step-by-step process in the form of an online user guide to enable individual growers to move freely within and between modules and support them through the process of achieving industry self-assessment and accreditation.

### Smartcane BMP Monitoring, Evaluation, Data Collection and Reporting System Attributes

- Web interface (written using Microsoft Active Server Pages and Net Framework 3.5);
- MS SQL Server 2008 R2 database backed;
- The SQL Server 2008 is an industry standard that enables data sourcing and interpretation from a range of different data systems e.g. Agdat, HRIC which will be accessed and utilised in support of the programs delivery and reporting requirements;
- Multiple versions of BMP program can be used over time:
  - Programs are split into modules
  - Modules are split into key areas
  - Key areas are split into worksheets
  - Worksheets contain practices
- New practices are mapped to any existing practices so that practice change can be queried over time;
- User based authentication:
  - Users are assigned permissions to view businesses
  - Users are assigned roles to view sections such as grower section, admin section, audit section

- Role based authorisation to certain sections of the site:
  - Allows only users that are in a role to gain access
  - Even if role based access is given only users given business permission can access the business records
- Smartcane BMP facilitators can assist growers through the process and maintain controls over what permissions are given;
- Procedures in place around how permissions are given;
- Industry support by CANEGROWERS team to provide technical support to growers;
- Auditing System in place; and
- Auditing Procedures developed.

### **Data Collection Attributes**

Farm data information:

- Area under production
- Total property area
- Irrigation area
- Non-irrigated area
- Specified crop area
- Region of farm
- Postcode of farm
- When the farm was no longer associated with the business

Business data information:

- Business name, ABN, address details, phone numbers,
- Contact Information collected is:
  - Contact Name, business, address details, phone numbers, email address.

Practices data information:

- District, region and state (Data can be related down to farm, postcode though it is not done to ensure privacy of individual growers)
- By module, key area and by worksheet
- By *Below, At and Above* industry practice
- By self-assessment and certified industry standard of practice
- Number of growers, ha and % of growers
- Industry averages is shown to a grower compared to their own progress during an assessment.

### **Hierarchy of Information**

- Users
  - Allows access to the site via username and password
- Roles
  - Restricts access to sections of the site
- Contacts
  - Linked to a user to provide information about them
  - Contact information also for non-users of the system.
- Businesses
  - Information about businesses in the system
  - A user needs to be assigned permission to view the business for them to see it in the web site
- Farms
  - Farms are associated to a business at a point in time.
  - Tracking of farms when they are bought and sold allows traceability of BMP products
- Farm Information

- Information about cropping areas can be assigned at a point in time
- Practices
  - Individual practices of what occurs on a farm e.g. (Irrigation scheduling is done on the farm)
- Worksheets
  - Allows grouping of practices to present to the grower or user
- Key Areas
  - Allows grouping of worksheets into logical groups
- Module
  - Used for grouping of key areas (e.g. Module Soil Health; Key Area: Managing Compaction)
- BMP Program
  - Groups together modules into a single version of BMP e.g. BMP Cane 2013
- BMP Program Relationships
  - Maps a practice to a worksheet, key area, module and BMP program version
- BMP equivalents
  - Allows the mapping of practices between versions of BMP programs. This allows a direct comparison over time between practices
- Site Content
  - Used for content management system
- Menus
  - Site Menus can be created and assigned to any page in the system

#### **Administration Reports**

- Roles for users
  - Allows the administrator to view what users are assigned to which roles in the system
- Monthly site usage
  - Allows the administrator to view which pages are being accessed within the system, aggregated by month.
- Registrations
  - Allows the administrator to view who has registered and what roles they have been assigned.
- Practices selected
  - Allows the administrator to view which practices have been selected by users/businesses/farms in the system within a time frame and export them to excel.
- Assessment Reports
  - Allows the administrator to view which users have conducted an assessment, the status of the assessment and results selected in the assessment
- BMP Manual
  - Allows the administrator to print off the BMP program, or export into word, excel or PDF.
- Action plans
  - Allows the administrator to print of the action plans created by a business
- Practices reports
  - View aggregated practice data statewide, regionally and by district.

#### **Smartcane BMP Monitoring, Evaluation, Data Collection and Reporting Capabilities**

Reporting capabilities have been designed and developed to include the following features and meet the requirements outlined in the Smartcane BMP Contribution Deed Item 4, 6 and 11 of Part A of Schedule 3 and clause 6.9:

A framework supporting data collection to underpin monitoring and evaluation of the Project achievements:

- A practical and efficient system to collect relevant data on an ongoing basis;
- Functions to identify and aggregate data for public reporting purposes;
- Capacity to support a System Review and Continuous Improvement program. QCGO supports a dedicated officer that is assigned responsibility to manage an oversee an annual process of review, evaluation and updating the Smartcane BMP Monitoring, Evaluation, Data Collection and Reporting System;
- The Smartcane BMP MEDCAR is hosted on the CANEGROWERS website which is publicly available;
- Functions for reporting data on participation in and outcomes of the Smartcane BMP Program, including the number of Industry Participants who have completed, self-assessed and achieved Smartcane BMP Accreditation by an Industry Assessor;
- A print function that produces each of the modules in a paper based format which is publicly available;
- Reporting to compare practices over time; and
- Reporting on activity within the site.

### Smartcane Management Practice Information Reports

The management practice information reports cover a range of information from the Smartcane modules for each management practice (or question) in each key area. Outlined below is a sample of the resultant output report that relates to businesses that have selected practices. CANEGROWERS will utilise this report for internal system review and continuous improvement purposes and provide a copy of the report to the Queensland Government on a quarterly basis in accordance with the requirements of the Deed of Agreement. The report will be submitted electronically in Microsoft Excel format



#### Specific module completion

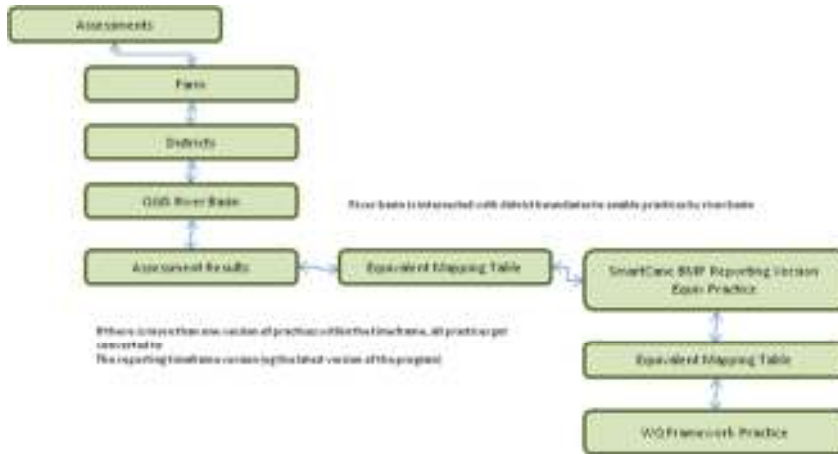
From: 28/05/2013 To: 30/05/2014 Refresh

This report relates to businesses that have selected practices. Areas in hectares

Module Name	Key Area Name	Worksheet Name	Practice	No Of Farms	Total Farm Count	Perc Of Farms	Area of Farms	Total Area Of Farms	Per Area Farms
Crop Production and Harvesting Management	Billet quality for planting	Billet quality for planting	Commercial harvester is set up to cut planting material with good quality undamaged billets	23	37	62.2	3405	9112	37.4
Crop Production and Harvesting Management	Billet quality for planting	Billet quality for planting	Dedicated plant cane harvester with rubberised rollers and optimised feed train set up, sharp chopper knives and basecutter blades is used to harvest planting material. Raccons of planting material used and quality are kept and compared to establishment performance of subsequent crops	14	37	37.8	5707	9112	62.6
Crop Production and Harvesting Management	Block selection for harvesting	Block selection for harvesting	Blocks are selected on basis of measured CCS, soil moisture conditions and whole farm management considerations	13	38	34.2	4771	9159	52.1

# P2R Reef Water Quality Risk Management Report

This report relies on mapping the P2R reef water quality risk management practices to the relevant “Equivalent” practices in the Smartcane system. A growers assessment answers are joined with the equivalent P2R practices so the aggregated output can be presented in terms of the P2R context. Each P2R practice can have different impacts on Reef Water Quality outcomes so the Smartcane system allows a weighting on the practice to be assigned with regard to its potential impact on water quality. These ratings are provided by QDAFF.



Outlined below is a sample of the resultant output report, see Appendix 1 for a copy of the full report inclusive of the Paddock to Reef Sugarcane Water Quality Risk Framework Alignment Criteria table.

CANEGROWERS will utilise the Paddock to Reef Sugarcane Water Quality Risk Framework for internal program review and evaluation purposes. In addition CANEGROWERS will provide the report on a six monthly basis (end of February and July) to the Queensland Department of Agriculture, Fisheries and Forestry (QDAFF) principal managers of the Paddock to Reef report and the Department of Environment and Heritage Protection in accordance with the requirements of the Deed of Agreement. The report will be submitted electronically in Microsoft Excel format.



## Water Quality Framework Report

Water Quality Framework Report

Region Name	Municip Name	WQ Practice	Risk Level	Current Weighted Zone Order Production Lit	Current Zone Order Production Lit	EQS Zones in Region for Region	Total Districts in Region	No. Zones for Region	% Total for Region
Palazzo	Integration and Storage Management	W2 Drainage lines are designed to minimise erosion and May polynoyr factors entering top or pit	Moderate - Low Risk	188.8	188.8	1	11	188.8	188.8
Palazzo	Integration and Storage Management	W5 Soil bank/soil management practices reduce sediment loss	Moderate - Low Risk	184.1	188.8	12	11	188.4	188.4
Palazzo	Integration and Storage Management	W5.2 Farm related soil management (soil bank related) sediment loss	Moderate - Low Risk	188.5	188.8	1	11	188.4	188.4
Palazzo	Integration and Storage Management	W5 The capacity of drainage lines are designed to minimise erosion and May polynoyr factors entering top or pit	Moderate - Low Risk	187.8	188.8	12	11	188.8	188.8
Palazzo	Soil Health and Nutrient Management	M8 Soil face applied, not incorporated	High Risk	181	188.4	11	11	188.4	188.4
Palazzo	Soil Health and Nutrient Management	31 No Open Cane Trash Burial	High Risk	185.4	187.75	5	11	188.4	188.4
Palazzo	Soil Health and Nutrient Management	173 Full collection bundle and volume of (cane trash) high-priority	High Risk	188	188.8	2	11	188.8	188.8
Palazzo	Soil Health and Nutrient Management	M8 Nitrogen budget (g 000) Analysis	Moderate	184	188.8	4	11	188.4	188.4

## Accreditation, Certification and Auditing

### Businesses completed modules:

Outlined below is the full report of the number of businesses that have completed modules in a given timeframe. CANEGROWERS will utilise this report for internal system review and continuous improvement purposes. CANEGROWERS will also provide the Department of Environment and Heritage Protection a copy of the report on a quarterly basis in accordance with the requirements of the Deed of Agreement. The report will be submitted electronically in Microsoft Excel format.



#### Specific module completion

From:  To:

This report shows the number of businesses who have completed modules in the given time frame.


Grower Count	Module Name
24	Farm Business Management
23	Natural Systems Management
278	Irrigation and Drainage Management
19	Workplace Health and Safety
281	Soil Health and Nutrient Management
289	Weed, Pest and Disease Management
42	Crop Production and Harvesting Management

## Growers completed modules by district

Outlined below is a sample of the resultant output report that relates to the number of growers who have completed the Smartcane modules by district. For a copy of the full report click the link below.

<http://files.canegrowers.com.au/queensland/BMP/GrowersCompletedModulesByDistrict.xls>

CANEGROWERS will utilise this report for internal system review and continuous improvement purposes. CANEGROWERS will also provide the Department of Environment and Heritage Protection a copy of the report on a quarterly basis in accordance with the requirements of the Deed of Agreement. The report will be submitted electronically in Microsoft Excel format.



**Specific module completion**

From: 25/05/2013 To: 30/06/2014 Refresh


This report shows the number of businesses who have completed modules in the given time frame in a district.

District	Grower Count	Module Name
Babinda	2	Farm Business Management
Babinda	1	Natural Systems Management
Babinda	11	Irrigation and Drainage Management
Babinda	9	Soil Health and Nutrient Management
Babinda	10	Weed, Pest and Disease Management
Babinda	1	Crop Production and Harvesting Management
Sundberg	1	Farm Business Management
Sundberg	1	Natural Systems Management
Sundberg	8	Irrigation and Drainage Management
Sundberg	2	Workplace Health and Safety
Sundberg	3	Soil Health and Nutrient Management
Sundberg	21	Weed, Pest and Disease Management
Sundberg	3	Crop Production and Harvesting Management
Sundekin	6	Farm Business Management
Sundekin	4	Natural Systems Management
Sundekin	37	Irrigation and Drainage Management
Sundekin	4	Workplace Health and Safety
Sundekin	40	Soil Health and Nutrient Management

## Number of growers in the Smartcane program who have achieved below, industry and above standard

Outlined below is the full report of the percentage of approved growers having selected each of the following practices.

CANEGROWERS will utilise this report for internal system review and continuous improvement purposes. CANEGROWERS will also provide the Department of Environment and Heritage Protection a copy of the report on a quarterly basis in accordance with the requirements of the Deed of Agreement. The report will be submitted electronically in Microsoft Excel format.



ADMIN HOME | SITE CONTENT | USER AND ROLE | ASSESSMENTS | REPORTS | PROGRAM | PUBLICATIONS | FARMS  
BUSINESSES

**Business Practice Percentage**

Report data has not been finalised - Report queue is processing data.

From: 1/04/2014 To: 30/06/2014 Refresh

Module Name	Below	Industry	Above
Crop Production and Harvesting Management	0	87.4	12.6
Farm Business Management	0	44.3	55.8
Irrigation and Drainage Management	4	83.5	12.5
Natural Systems Management	0	95.5	4.5
Soil Health and Nutrient Management	4.3	83.7	12
Weed, Pest and Disease Management	2.6	81.8	15.6
Workplace Health and Safety	6	68.4	25.6



## Growers with an ERMP prepared and accredited to industry standard or above

Within the Smartcane system a report for those having checked at the start of the assessment that they have an ERMP prepared are able to be extracted and information relating to the modules they have completed as well as if they have ticked industry or above to any question in the assessment.

Those growers that have ticked below are able to ask for support during the assessment process to improve practices to industry or above.

Outlined below is a sample of the resultant output report. CANEGROWERS will utilise this report for internal system review and continuous improvement purposes. CANEGROWERS will also provide the Department of Environment and Heritage Protection a copy of the report on a quarterly basis in accordance with the requirements of the Deed of Agreement. The report will be submitted electronically in Microsoft Excel format.



### ERMP Report

Current module progress for businesses that have created the assessment as an ERMP assessment.

- ✔ Complete
- ❌ Complete including Below Industry Standard

Region	Business Name	Soil Health and Nutrient Management	Irrigation and Drainage Management	Weed, Pest and Disease Management	Crop Production and Harvesting Management	Farm Business Management	Natural Systems Management	Workplace Health and Safety
Bahinda		✔	✔	✔				
Bahinda		✔	✔	✔				
Bahinda	Grower Names Omitted	✔	✔	✔				
Bahinda			✔	✔				
Bahinda		✔	✔	✔				
Bahinda		❌	✔	✔				
Bahinda			✔	✔		✔		
Bahinda		✔	✔	✔				
Bahinda			✔	✔				
Bahinda		❌	✔	✔				
Bahinda		✔	✔	✔				
Bahinda		✔	✔	✔	✔	✔	✔	

## Number of modules and name of module completed by each grower

Outlined below is a sample of the resultant output report. Grower names and farms have been obfuscated for this sample. CANEGROWERS will utilise this report for internal system review and continuous improvement purposes. CANEGROWERS will also provide the Department of Environment and Heritage Protection a copy of the report on a quarterly basis in accordance with the requirements of the Deed of Agreement. The report will be submitted electronically in Microsoft Excel format.



### Specific module completion

From:  To:

This report shows the number of businesses who have completed modules in the given time frame.

Region	Business	Farm	Module	Total Modules Completed
Babinda	[obfuscated]	[obfuscated]	Irrigation and Drainage Management	1
Babinda	[obfuscated]	[obfuscated]	Soil Health and Nutrient Management	1
Babinda	[obfuscated]	[obfuscated]	Weed, Pest and Disease Management	1
Babinda	[obfuscated]	[obfuscated]	Irrigation and Drainage Management	1
Babinda	[obfuscated]	[obfuscated]	Soil Health and Nutrient Management	1
Babinda	[obfuscated]	[obfuscated]	Weed, Pest and Disease Management	1
Babinda	[obfuscated]	[obfuscated]	Irrigation and Drainage Management	1
Babinda	[obfuscated]	[obfuscated]	Irrigation and Drainage Management	1
Babinda	[obfuscated]	[obfuscated]	Irrigation and Drainage Management	1
Babinda	[obfuscated]	[obfuscated]	Irrigation and Drainage Management	1
Babinda	[obfuscated]	[obfuscated]	Crop Production and Harvesting Management	5
Babinda	[obfuscated]	[obfuscated]	Farm Business Management	5
Babinda	[obfuscated]	[obfuscated]	Irrigation and Drainage Management	5
Babinda	[obfuscated]	[obfuscated]	Natural Systems Management	5
Babinda	[obfuscated]	[obfuscated]	Weed, Pest and Disease Management	5
Bundaberg	[obfuscated]	[obfuscated]	Workplace Health and Safety	1
Bundaberg	[obfuscated]	[obfuscated]	Irrigation and Drainage Management	1

## Growers Seeking Training

Throughout the assessment process a grower can seek more information and training. Emails are sent, as well as a report of growers that have identified where they would like more information and which module they are seeking the information on.

A sample of the report is below. Grower names and farms have been obfuscated for this sample. CANEGROWERS will utilise this report and that of the facilitators quarterly reports for internal system review, training and continuous improvement purposes. CANEGROWERS will also provide the Department of Environment and Heritage Protection a copy of the report on a quarterly basis in accordance with the requirements of the Deed of Agreement. The report will be submitted electronically in Microsoft Excel format.



### Growers Seeking Training

From:  To:

Shows how many growers are seeking training for the time period and for all time.

District	Grower	Module	Date Requested
Burdakin	[obfuscated]	Irigation and Drainage Management	6/05/2014 11:50:54 AM
Burdakin	[obfuscated]	Soil Health and Nutrient Management	6/05/2014 11:15:03 AM
Mackay	[obfuscated]	Soil Health and Nutrient Management	30/04/2014 10:27:36 AM
Bundaberg	[obfuscated]	Weed, Pest and Disease Management	14/04/2014 11:14:45 AM
Innisfail	[obfuscated]	Farm Business Management	21/03/2014 2:44:40 PM
Babinda	[obfuscated]	Soil Health and Nutrient Management	11/03/2014 1:33:55 PM
Burdakin	[obfuscated]	Irigation and Drainage Management	4/03/2014 10:12:56 AM
Proserpine	[obfuscated]	Soil Health and Nutrient Management	3/03/2014 10:38:14 AM
Babinda	[obfuscated]	Soil Health and Nutrient Management	13/02/2014 11:42:32 AM
Mackay	[obfuscated]	Weed, Pest and Disease Management	4/02/2014 12:21:50 PM
Mackay	[obfuscated]	Irigation and Drainage Management	22/01/2014 2:05:20 PM
Bundaberg	[obfuscated]	Soil Health and Nutrient Management	14/01/2014 1:31:33 PM
Babinda	[obfuscated]	Farm Business Management	13/01/2014 5:12:36 PM
Pine Creek	[obfuscated]	Weed, Pest and Disease Management	13/12/2013 2:16:23 PM

## Recognition of Prior Learning (RPL)

Many practices that are contained in the Smartcane system have cross over to other courses within the Australian Quality Training Framework (AQTF). Smartcane has added these practices and mapped them to existing practices in the Smartcane program. This enables the Smartcane system to determine if a grower will have sufficient recognition of prior learning RPL skills to complete any of the AQTF modules contained in the system.

The number of practices selected by the grower verses what is required to complete the AQTF module is shown in the sample report below. Grower details have been obfuscated for this sample. CANEGROWERS will also provide the Department of Environment and Heritage Protection a copy of the report on a quarterly basis in accordance with the requirements of the Deed of Agreement. The report will be submitted electronically in Microsoft Excel format.



### RPL Report

Select a business and assessment to view if the assessment ticks off on the RPL requirements for each Course Code.

Business:

Assessment:

Module Name	Practices Selected	Practices Required	Is Completed
AHC3AC301A	21	54	
AHC3AC305A	14	30	
AHC3AC307A	24	54	
AHC3MG406A	6	23	
AHC3U5402A	11	11	✓
AHC3U5306A	16	18	
AHC3U5307A	19	29	
AHC3HM902A	12	34	
AHC3RG301A	3	11	
AHC3RG304A	8	21	
AHC3MOM307A	4	23	
AHC3NAR301A	2	6	
AHC3NAR303A	7	16	
AHC3OHS401A	5	30	
AHC3PCM402A	17	34	
AHC3QL401A	3	16	
BSBSMB405A	17	28	
BSBSMB406A	14	15	

### DEHP Aggregated Report

Outlined below is a sample of the resultant output report. CANEGROWERS will utilise this report for internal system review and continuous improvement purposes. CANEGROWERS will also provide the Department of Environment and Heritage Protection a copy of the report on as required basis in accordance with the requirements of the Deed of Agreement. The report will be submitted electronically in Microsoft Excel format.

Aggregated Growers

From: 26/08/2013 To: 26/08/2014 Refresh

District	Module Name	Key Area Name	Standard	Practice	Farm # Self Assessed	Farm # Accredited	Total Farm Count	Total Farm Count Accred	Perc Of Farms	Perc Of Farms Accred	Area Of Farms	Area Of Farms Accred	Perc Area Of Farms	Perc Area Of Farms Accred	Total Area Of Farms	Total Area Of Farms Accred
Batinda	Soil Health and Nutrient Management	Managing Compaction	Managing compaction	Row spacing is not matched to wheel spacing Machinery is operated in wet field conditions												
Batinda	Soil Health and Nutrient Management	Managing Compaction	Managing compaction	Row spacing and most machinery wheel spacings are matched. Initial row establishment formed GPS guidance. Where possible machinery operations are delayed to avoid operating in wet field conditions	8	1	8	1	88.89	11.11	547.81	127.69	81.67	18.89	547.81	127.69
Batinda	Soil Health and Nutrient Management	Managing Compaction	Managing compaction	Row spacing and all machinery wheel spacings are matched. GPS guidance is used for all field operations: bed forming, planting, spraying and harvesting. Machinery is not operated in wet field conditions												
Batinda	Soil Health and Nutrient Management	Placement of Fertiliser and Timing of Application	Placement	On steep slopes only (i.e. Inertial on flat. Fertiliser is applied based on the surface. Apply when crop root system has developed.	11	1	11	1	91.67	8.33	928.40	127.69	87.91	12.09	928.40	127.69

Additional reporting capabilities include:

- The MEDCAR system provides a reporting function that monitors individual growers' practice change overtime by locking the practice records per module on the 30<sup>th</sup> June annually. In the coming years CANEGROWERS will be able to generate reports per grower assessing the scope and scale of practice change if any over time. CANEGROWERS will utilise this report for internal system review, identify growers in need of further support and training and continuous improvement purposes. CANEGROWERS will also provide DEHP a copy of this report exclusive of grower identity quarterly reporting and on an as required basis in accordance with the requirements of the Deed of Agreement.
- Functions to identify and aggregate data for public reporting purposes, See link to Smartcane Latest news <https://www.smartcane.com.au/LatestNews/LatestNews.aspx> for Smartcane BMP Farms and Areas and Smartcane BMP Communication and Engagement Strategy for more information;
- A writeable PDF of each module can be accessed for printing a paper based version on the Smartcane BMP public website, located in each of the seven Smartcane BMP modules see link to Smartcane <https://www.smartcane.com.au/home.aspx>
- All reports will be disseminated electronically in Microsoft Word and Excel format.

### Data Collection and Protocols

Data collection capabilities and protocols are designed and developed to include the following features and meet the requirements outlined in the Smartcane BMP Contribution Deed Schedule 6 Data Collection:

- Data collated on Industry Participant system/s will remain confidential in line with standard Industry data practice and procedures; and
- De-identified aggregated (district or regional i.e. Mill district) data will be used to support Industry activities and to:
  - inform the progress and success of the project
  - measure the Smartcane BMP Module engagement and uptake by Industry Participants
  - measure the Smartcane BMP Modules and completion by Industry Participants
  - measure Smartcane BMP Accreditation by Industry Assessors
  - support Industry R, D&E needs, product development and training
  - support district and industry wide extension needs, product development and training

- provide stewardship / management practice information to support Industry continuous improvement
- inform modelling and government programs, including the Reef Protection Program and Reef Plan and allow DEHP to determine if legislative requirements are being met
- Support monitoring, evaluation and review of the Cane BMP Communication and Engagement Strategy stage 2
- Collect data from Industry Participants to measure the progress of the Project including:
  - \*Smartcane BMP Modules workshops, pilots and testing information and statistics
  - \*Engagement – who, where and how many Industry Participants and other Organisations have been consulted
  - Uptake within Industry of the BMP Modules, including BMP Accreditation levels, management practice data
  - Numbers of Industry Participants who, in relation to BMP Accreditation have achieved:
    - above BMP standard
    - meet BMP standard
    - working towards BMP standard
  - Monitoring data – changes in the above over time

Note: \*data outlined above may be provided through other sources including the Smartcane BMP facilitator quarterly reports and Smartcane BMP Communication and Engagement Strategy.

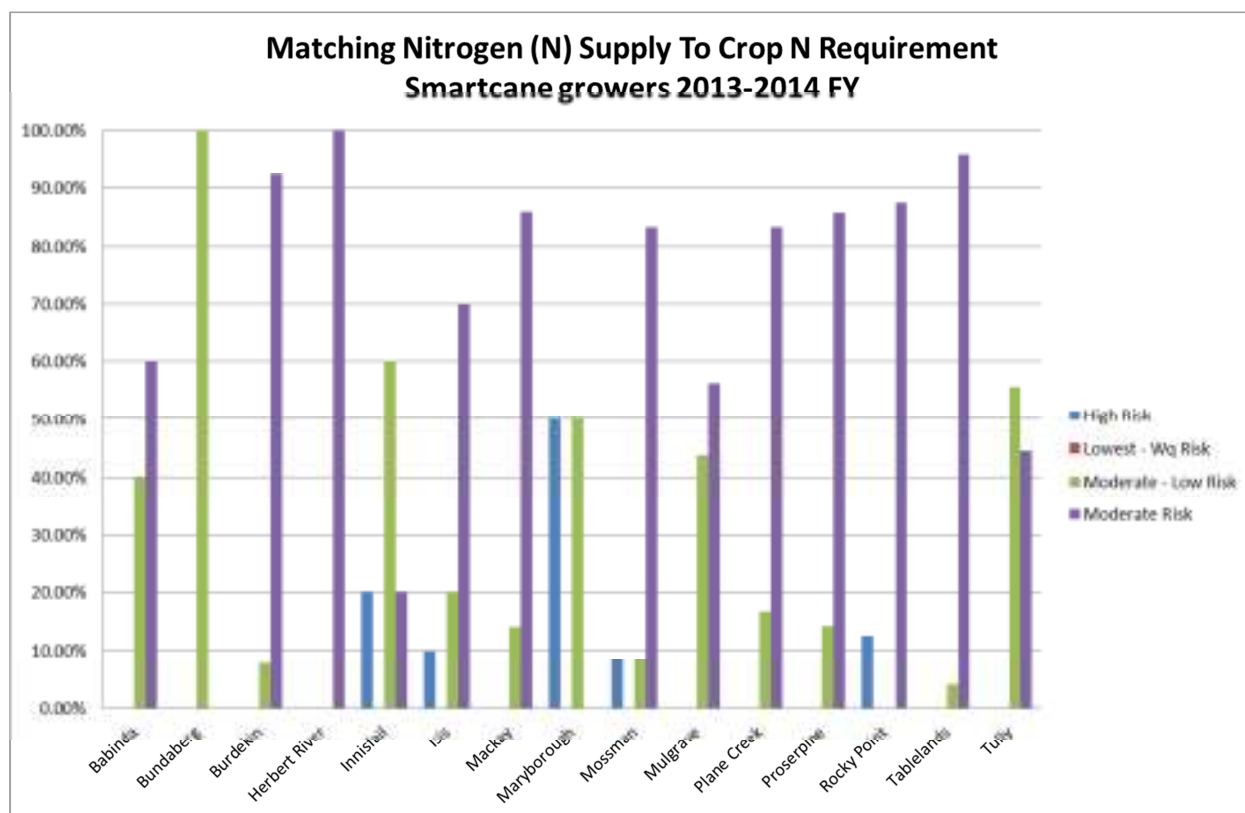
### **System Review and Continuous Improvement**

QCGO has committed an officer to manage the Monitoring, Evaluation, Data Collection and Reporting System which include data entry management, monitor, review, evaluate and update system performance as required. QCGO in agreement with SRA will undertake an annual review of the modules authored by SRA (Drainage and Irrigation; Pest, Disease and Weed Management and Soil Health and Nutrient Management) to action amendments to modules, practices, assessments and action plans as improved best industry practice principles and practices come online. QCGO will also undertake an annual review of the remaining modules (Farm Business Management; Workplace Health and Safety and Natural Systems Management) to action amendments to modules, practices, assessments and action plans as improved best industry practice principles and practices come online.

## Appendix 1.

### Paddock to Reef Sugarcane Water Quality Risk Framework Alignment Report and Criteria table

Row Labels	High Risk	Lowest - Wq Risk	Moderate - Low Risk	Moderate Risk	Grand Total
Babinda	0.00%	0.00%	40.00%	60.00%	100.00%
Bundaberg	0.00%	0.00%	100.00%	0.00%	100.00%
Burdekin	0.00%	0.00%	7.69%	92.31%	100.00%
Herbert River	0.00%	0.00%	0.00%	100.00%	100.00%
Innisfail	20.00%	0.00%	60.00%	20.00%	100.00%
Isis	10.00%	0.00%	20.00%	70.00%	100.00%
Mackay	0.00%	0.00%	14.06%	85.94%	100.00%
Maryborough	50.00%	0.00%	50.00%	0.00%	100.00%
Mossman	8.33%	0.00%	8.33%	83.33%	100.00%
Mulgrave	0.00%	0.00%	43.75%	56.25%	100.00%
Plane Creek	0.00%	0.00%	16.67%	83.33%	100.00%
Proserpine	0.00%	0.00%	14.29%	85.71%	100.00%
Rocky Point	12.50%	0.00%	0.00%	87.50%	100.00%
Tablelands	0.00%	0.00%	4.00%	96.00%	100.00%
Tully	0.00%	0.00%	55.56%	44.44%	100.00%
<b>Grand Total</b>	<b>1.71%</b>	<b>0.00%</b>	<b>15.02%</b>	<b>83.28%</b>	<b>100.00%</b>



Priority	Management tactic	Weighting Water quality assessment	Indicative Practice Levels 2013			
			High Risk	Moderate Risk	Moderate - Low Risk	Lowest WQ Risk, commercial feasibility unproven
			Superseded	Minimum	Best Practice	Innovative
<b>Soil Management</b>						
1	Crop residue cover	25%	<b>S1:</b> No Green Cane Trash Blanket	<b>S2:</b> Green Cane Trash Blanket		
2	Controlled Traffic	25%	<b>S3:</b> Old industry standard row spacing. Farm equipment not on matching wheel centres.	<b>S4: Matching wheel centres on equipment used for all land prep and pre-harvest operations.</b> Harvester and haul-out wheel spacing not matched to other farm equipment	<b>S5:</b> Permanent wheel tracks. Row spacing at 1.8m or more . <b>ALL equipment including harvesters and haul-outs utilising same wheel spacing.</b> DGPS guidance for bed forming/planting operations as a minimum.	<b>S6:</b> Permanent wheel tracks. Row spacing at 1.8m or more. ALL equipment including harvesters and haul-outs utilising same wheel spacing. DGPS guidance for all operations.
3	Land management during cane fallow	20%	<b>S7:</b> Plough Out, Replant (PORP)  OR  No rotational crop. Bare or “weedy” fallow maintained with cultivation and/or herbicides.	<b>S8:</b> Legume rotational crop grown during cane fallow period. Conventional cultivation to prepare for legume planting. Legume mechanically incorporated.  OR  Well managed fallow with trash blanket, sprayed out with no tillage.	<b>S9:</b> Legume rotational crop grown during cane fallow period. Min/zonal tillage prior to planting legume. Legume crop harvested for grain.  OR  Killed with herbicide and residues left intact until necessary pre-plant operations for cane.	<b>S10:</b> Legume rotational crop grown during cane fallow period, with legume direct drilled into previous sprayed out cane. Legume crop residues left intact above ground until necessary pre-plant operations (minimum or zero till) for cane.
4	Tillage in plant cane	20%	<b>S11:</b> Full cultivation (number and nature of cultivations region-specific)	<b>S12:</b> Reduced tillage (number and nature of cultivations region-specific).	<b>S13:</b> Bed renovation and/or zonal tillage, minimum required to be suitable for	<b>S14:</b> Zero tillage plant cane



					planting.	
5	Tillage in ratoon cane	10%	S15: Full cultivation (number and nature of cultivations region-specific)	S16: Minimum tillage (region-specific). Ripping of wheel tracks as necessary	S17: No tillage except as a component of Integrated Weed Mgt planning for avoiding herbicide resistance	S18
<b>Nutrients</b>						
1	Matching N supply to crop N requirements	60%	N1: District rules of thumb determine applied N rate	N2: Nitrogen budget developed (eg 6ES) with estimated N demand based on a yield expectation of Estimated Highest Average Annual Yield + 20% ( <b>district yield potential</b> ) for plant or ratoon stage. Final application rates are as per calculated amount.	N3: Nitrogen budget (eg 6ES) developed with estimated N demand based on growers own yield expectations for <b>specific blocks</b> and <b>ratoon numbers</b> and considers seasonal climate predictions. Final application rates are as per calculated amount.	N4: As for B, but with planning and application targeting <b>yield zones within blocks</b> .
2	Timing of fertiliser application	30%	N5: Weather only impacts upon ability to complete application at that time	N6: Application occurs with consideration given to short term (<4 days) rainfall forecast	N7: Application occurs prior to expected wet season commencement and with adequate risk assessment, inc weekly rainfall forecast.	N8: As for B, plus utilising seasonal climate forecasts
3	Application method	10%	N9: Surface applied, not incorporated.	N10: Subsurface (including surface applied and watered in)		
<b>Herbicides</b>						

1	Timing application of residual herbicides	40%		<b>H1:</b> Residual herbicides applied when it is most convenient and/or in salvage situations.	<b>H2:</b> Residual herbicides applied with due consideration to current weather conditions (including checking BoM radar within 2hrs of application) and to 48hr rainfall forecast	<b>H3:</b> As for Min Std, plus: Residual herbicide applications timed with due consideration of 4 day rainfall forecast.	<b>H4:</b> As for Min Std, plus: Residual herbicide applications consider seasonal climate forecasts of the commencement of the wet season (specify regional date) and with due consideration to 4 day rainfall forecast. Use of SafeGauge for Pesticides.
2	Targeting application to reduce the volume of herbicide applied	40%		<b>H5:</b> 100% coverage through conventional boomspray for all applications. Generally use a set residual+knockdown tank mix	<b>H6:</b> 100% coverage through conventional boomspray for most applications. Tank mix tailored to weed situation in each block, with residuals not used if not required.	<b>H7:</b> Area treated with residual herbicides is reduced through use of bandspraying, except for specific problem situations requiring more complete coverage. Inter-rows managed with knockdown products through directed or shielded spraying.	<b>H8:</b> As for B, plus use of weed detecting equipment to further reduce total herbicide applied.
3	Residual herbicide use in ratoons	20%		<b>H9:</b> Residual herbicides used whenever likely to be effective, in both plant and ratoon cane.	<b>H10:</b> Residual herbicides used once only on ratoon crops.	<b>H11:</b> Overall weed management strategy is based upon use of knockdown products in ratoons. Residual use in ratoons occurs only in strategic response to problem situations.	
Water							
1	Calculating the amount of water to	Irrig	No Irrig	<b>W1:</b> Amount of water applied to each block exceeds the soil water deficit	<b>W2:</b> Amount of water applied to each block exceeds the soil water	<b>W3:</b> Amount of irrigation water applied to each block is less than or matches the soil	

	apply	70	0	by <b>more than</b> 50%.	deficit by <b>less than</b> 50%.	water deficit.	
2	Managing surface runoff	20	100	<p><b>W4:</b> No on-farm water capture.</p> <p><b>W4.1:</b> Most drainage lines are poorly designed and contribute to sediment loss.</p> <p><b>W4.2</b></p>	<p><b>W5.2</b> Farm rainfall runoff management structure reduces sediment loss.</p> <p><b>W5:</b> The majority of drainage lines are designed to minimise erosion and filter sediment before entering trap or pit.</p> <p><b>W5.1:</b> Recycle pits have insufficient capacity to capture all irrigation induced runoff.</p>	<p><b>W6:</b> Farm rainfall runoff management structure reduces sediment loss.</p> <p><b>W6.2</b> Drainage lines are designed to minimise erosion and filter sediment before entering trap or pit.</p> <p><b>W6.1:</b> Recycle pits have sufficient capacity to capture all irrigation induced runoff.</p> <p>Recycle pits have sufficient pumping capacity to re-use stored water.</p>	<p><b>W7:</b> Runoff from the first 15 mm of rainfall is captured and retained on farm.</p> <p>Drainage lines are designed to minimise erosion and filter sediment before entering trap or pit.</p> <p><b>W7.1:</b> All irrigation runoff is able to be captured and stored on-farm.</p> <p>Recycle pits have sufficient pumping capacity to re-use stored water.</p>
3	Optimising the irrigation system	10	0	<b>W8:</b> Irrigation system performance assessments have not occurred.	<b>W9:</b> Irrigation system performance assessments occur on an irregular basis.	<b>W10:</b> Irrigation system performance assessments occur on a regular basis.	

