

Burdekin region

Second Report Card 2010

Reef Water Quality Protection Plan

Regional profile

The Burdekin region covers approximately 141,000 square kilometres and is largely drained by the Burdekin River system. The main agricultural land use is grazing (90 per cent), with sugarcane (one per cent) and horticulture (less than 0.01 per cent) prevalent in coastal areas. The major threat from this land use is sediment and associated particulate (and some dissolved) nutrients from soil erosion, while some pesticide residues have also been detected in river runoff. The 2009-2010 year saw above median rainfall and discharges in the Burdekin region.

This report card measures progress from the 2009 baseline towards Reef Water Quality Protection Plan (Reef Plan) goals and targets. It assesses the combined results of all Reef Plan actions up to June 2010. Report cards are produced as part of the Paddock to Reef program.

The regional Natural Resource Management body, NQ Dry Tropics, partners with industry groups to deliver training, extension support and financial incentives to landholders to accelerate best practice adoption of land management in the sugarcane, horticulture and grazing industries.

Key findings

- The overall marine condition in 2009-2010 was poor. Inshore water quality was moderate, while seagrass meadows and coral reefs were poor.
- Overall, progress towards Reef Plan targets has been encouraging; however, it will take time for these achievements to translate into improved marine condition.
- Thirteen per cent of graziers, 26 per cent of horticulture producers and 14 per cent of sugarcane growers have adopted improved land management practices.
- The loss of riparian areas has slowed in recent years (2005 to 2009) indicating progress towards the Reef Plan target.
- The greatest proportional catchment load reduction was the pesticide load with an estimated 225 kilograms (10 per cent) less.
- The significant progress has been driven primarily by the Australian Government's Reef Rescue program along with Queensland Government and industry-led initiatives.

Paddock to Reef program

The Paddock to Reef program, funded jointly by the Australian and Queensland Governments, is a highly innovative approach to integrating monitoring and modelling information on management practices, catchment indicators, catchment loads and the health of the Great Barrier Reef.



Map of the Burdekin region and Great Barrier Reef Marine Park showing the paddock, catchment and marine monitoring sites.

Progress and status

Targets		Region	Catchments				
			Black	Burdekin	Don	Haughton	Ross
% adoption improved practices	Grazing		13				
	Horticulture		26				
	Sugarcane		14				
% loss	Wetlands	0.03	0.62	0.09	-0.03	-0.02	-0.04
	Riparian	0.29	0.84	0.26	0.33	0.25	0.98
% groundcover		95	96	95	99	98	96
% load reduction	Nitrogen		6				
	Phosphorus		3				
	Sediment		2				
	Pesticides		10				
Overall marine condition							
Water quality							
Seagrass							
Corals							

■ Very good ■ Poor
■ Good ■ Very poor
■ Moderate

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Australian Government



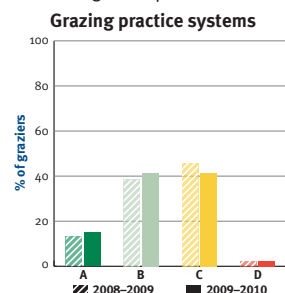
Queensland Government

Management practice results

Land management practices have been improving over time. Progress since the 2008-2009 baseline is presented below.

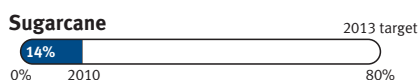


By June 2010, 13 per cent of graziers had adopted improved land management practices.

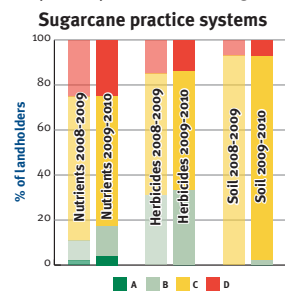


By June 2010, 56 per cent of graziers were using (A or B) practice systems that are likely to maintain land in good to very good condition or improve land in lesser condition. Improved management practice systems for grazing are presented using the ABCD framework:

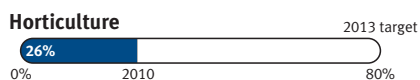
- A – Practices likely to maintain land in very good condition or improve land in lesser condition
- B – Practices likely to maintain land in good condition or improve land in lesser condition
- C – Practices that may maintain land in fair condition or gradually improve land in poor condition
- D – Practices likely to degrade land to poor condition.



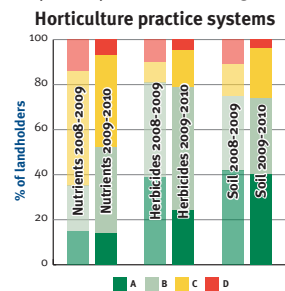
By June 2010, 14 per cent of sugarcane growers had adopted improved land management practices.



By June 2010, cutting-edge (A) or best management (B) practice systems were used by 17 per cent of sugarcane growers for nutrients, 33 per cent for herbicides and two per cent for soil.



By June 2010, 26 per cent of horticulture producers had adopted improved land management practices.



By June 2010, cutting-edge (A) or best management (B) practice systems were used by 52 per cent of horticulture producers for nutrients, 79 per cent for herbicides and 74 per cent for soil.

Improved management practice systems for sugarcane and horticulture are presented using the ABCD framework:

- A – Cutting-edge practices
- B – Best practices
- C – Common or code of practices
- D – Unacceptable practices.

Catchment results

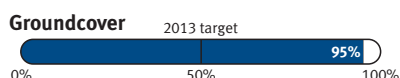
Historically, 10 per cent of wetlands and 19 per cent of riparian forest have been lost from pre-European extent.



Loss of wetlands remained relatively constant at 0.03 per cent when comparing 2001 to 2005 with 2005 to 2009 (35 hectares).



Loss of riparian forest between 2005 and 2009 was 0.29 per cent (5988 hectares). This was 0.17 per cent (3537 hectares) less than 2001 to 2005.

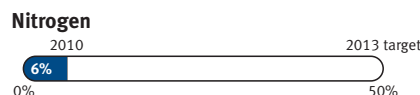


Late dry season groundcover for grazing lands was 95 per cent. This is due to high rainfall over recent years.

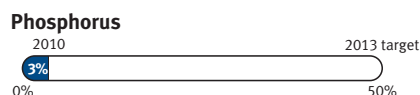
Catchment loads

The pollutant loads at the end of the catchment come from modelling, validated by monitoring, to remove the effect of a variable climate from year to year.

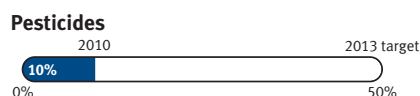
Land management changes in the horticulture industry have not been modelled. Changes in riparian management also could not be modelled due to the lack of data.



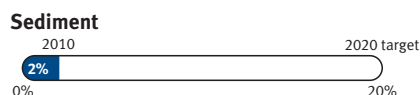
The estimated annual average total nitrogen load leaving catchments reduced by six per cent (346 tonnes).



The estimated annual average total phosphorus load leaving catchments reduced by three per cent (35 tonnes).



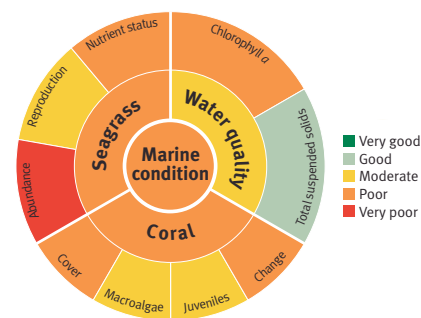
The estimated annual average pesticide load leaving catchments reduced by 10 per cent (225 kilograms).



The estimated annual average suspended sediment load leaving catchments reduced by two per cent (61,000 tonnes).

Marine results

The inshore area of the Burdekin region was influenced by flood waters and there were localised areas of coral bleaching where reefs were exposed to moderate levels of heat stress in late summer.



Marine graphic descriptions:

- **Chlorophyll a** indicates nutrient availability and productivity.
- **Total suspended solids** measures particulate matter in water.
- **Seagrass abundance** includes the cover and change in cover.
- **Reproduction** indicates the potential of seagrass meadows to recover from disturbances.
- **Nutrient status** measures the response of seagrass to nutrient conditions in surrounding waters.
- **Coral cover** is a measure of the percentage of coral on a reef and indicates the capacity of coral to persist under the current environmental conditions and its potential to recover.
- **Coral change** measures change in coral cover which indicates coral resilience to disturbances.
- **Macroalgal cover** - high abundance indicates poor water quality and negatively affects the resilience of coral communities.
- **Coral juvenile density** measures the abundance of corals less than 10 centimetres in diameter which indicates the recovery potential from disturbances.

Water quality

In shore water quality was moderate, having gradually improved from poor since 2005-2006. This improvement has been driven by an improvement in suspended solids compared to a decline in chlorophyll a. However, both chlorophyll a and total suspended solids were, at times, above *Water Quality Guidelines for the Great Barrier Reef Marine Park* for inshore waters. Water quality was poorer in the inshore areas.

A range of pesticides was detected including diuron, atrazine, tebuthiuron and metolachlor. At the Orpheus Island site, herbicides at times exceeded the combined concentration harmful to marine plants.

Seagrass

Inshore seagrass meadows have progressively declined since 2005-2006. This is driven by a relatively large decline in abundance to very poor at all sites. Reproductive effort remained moderate and the nutrient content of seagrass tissue indicated high concentrations of phosphorus in coastal habitats and nitrogen in reef habitats.

Coral

Inshore coral reefs were in poor condition, reflecting poor coral cover and moderate densities of juvenile colonies and macroalgae cover. Coral cover across the region has not recovered from impacts of bleaching in 1998 and 2002. The sustained moderate cover of macroalgae at some locations may be suppressing the recovery of coral communities following the impact of disturbances.