

Diuron – can we keep it?



Good weed suppression in ratoon cane with a trash blanket.



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Although good progress was made towards achieving the Reef Protection Plan's 2013 target of a 50 per cent reduction in pesticide loads, with water quality improvement continuing to be a major priority, a new target of 60 per cent reduction has been set. This could mean that diuron-based herbicides run the risk of further restrictions on use if run-off levels are not brought under control.

Diuron use rules

Product label changes followed the release of the Australian Pesticides and Veterinary Medicines Authority (APVMA) review of diuron in 2012. These included:

- region-specific 'no-spray' periods for rates more than 450 g/active/ha
- no application in waterlogged areas
- no use if greater than 50 mm rainfall is expected within three days of application
- no irrigation within three days of application
- no application where the slope exceeds three per cent
- spot spraying to be not more than five per cent of total farm area
- only one application per calendar year.

Why diuron is still being monitored

Diuron is still under scrutiny as it is one of the PS11 herbicides being monitored under the Reef Protection Plan – a joint

Federal and Queensland government program to improve water quality over the Great Barrier Reef.

The Reef Rescue program, which many farmers have participated in, is also part of the Reef Protection Plan.

This program assists farmers to make farm management changes that help to improve water quality leaving farms and, hence, improve the water quality within the Great Barrier Reef.

The Reef Protection Plan has specific targets for pesticide load reductions over time. To monitor progress, actual measurements of riverine and marine pesticide levels and modelling are used. Targets are based on reductions compared to a base year (2008-2009).

The 2013 target for pesticides was a 50 per cent reduction in loads found in Great Barrier Reef waters. This target has since been raised to a 60 per cent reduction by 2018.

Marine water quality performance

Figure 1 shows the modelled pesticide load reductions achieved by June 2013 compared to the base years of 2008-2009. Although the target of 50 per cent reduction was not achieved, good progress has been made.

Actual measurements of herbicides at 11 marine sites from Sarina Inlet to Low Isles generally supports this modelling.

There are, however, some regional differences, with the Wet Tropics showing more fluctuation between years, probably due to rainfall variations.

Although diuron is of most concern, monitoring has also detected other herbicides used in sugarcane: ametryn, atrazine, hexazinone, metolachlor and imazapic as well as the insecticide imidacloprid. A number of other herbicides used in other crops have also been detected.

Most marine detections for all regions have been at levels either at which there are no known effects on plants or animals, or slightly higher levels, which may compromise photosynthesis by some phytoplankton called diatoms.

However, the relatively low-level presence of herbicides may interact with other marine stressors, such as sediment, increased temperature, ocean pH and elevated nutrient levels, to slow the recovery of marine ecosystems after some stress event. Marine scientists are investigating these interrelationships.





Above: Diuron based herbicides like Velpar® K4™ DF® give reliable residual weed control.

**Per cent reduction in PS11 herbicides
2012–2013 compared to 2008–2009 baseline**

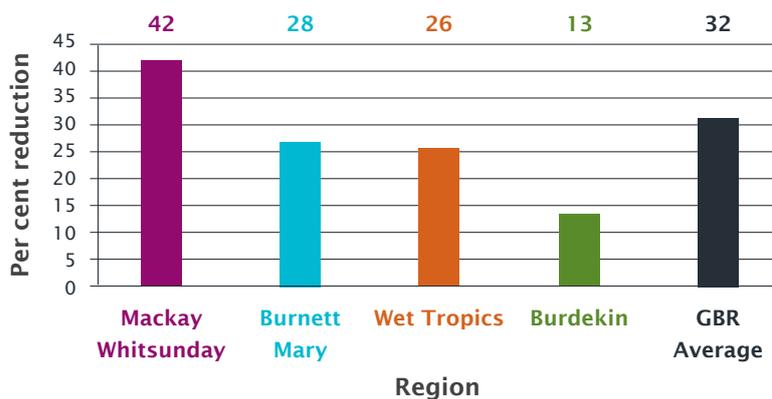


Figure 1: Progress towards achievement of the 2013 target of 50 per cent reduction in pesticide loads varied across regions. *Source: Great Barrier Reef Report Card 2012 and 2013 Reef Water Quality Protection Plan Results.*

Freshwater quality performance

Herbicides from farms find their way into the marine environment by way of rivers and creeks. Monitoring of water quality of rivers and creeks within cane-growing areas shows the results of farming practices more readily, as there is a much faster 'cause and effect'.

Monitoring of river systems indicates we still have a way to go. River and freshwater ecosystems have a lower tolerance to herbicide levels than marine systems.

Monitoring by the Queensland Government's Department of Science, Information, Technology, Innovation and the Arts (DSITIA) revealed the highest levels of diuron in the Mackay region (Sandy Creek and Pioneer River) in January 2014 and in the Burdekin region (Barratta Creek) from October to December 2013.

Levels were above the freshwater ecotoxicity threshold and also above the irrigation water quality threshold. Diuron concentrations also spiked above the ecotoxicity threshold at the Tully River and Herbert River monitoring sites during the 2014 wet season, but did not exceed the irrigation water quality threshold. The Johnstone, Burdekin and Burnett River's diuron

concentrations have all been below the ecotoxicity threshold. Programs are in place in the high-risk catchments to reduce the risk of high concentrations recurring in the coming wet season.

What growers can do to meet the new target

Growers can do their part in helping to protect the environment and retain diuron-based herbicides by applying them according to label instructions.

Remember that there are region-specific no-spray periods for rates of active ingredient above 450 g/ha.

Except for the Wet Tropics where rates above 450 g/active/ha are banned all year, there are slight differences within regions depending on whether a diuron-only herbicide (e.g. Diurex® WG) or a diuron plus hexazinone herbicide (e.g. Barrage or Farnoz Bobcat® Combi WG) is being used.

Growers can also participate in the Smartcane BMP program to reinforce the industry's commitment to self-regulation. Contact your local productivity service group or CANEGROWERS to find out who your local Smartcane BMP facilitator is.

With the new 60 per cent reduction target now in place, monitoring of both marine and river environments will continue. There are 15 freshwater and 11 marine pesticide monitoring sites within the sugarcane production region. If the levels do not improve, this will have an impact on the chemicals that can be used in the future.

Ongoing chemical reviews

The APVMA reviews chemical registrations from time to time, in response to new knowledge or to submissions by other organisations or individuals.

Current reviews include 2,4-D and chlorpyrifos. Future reviews planned by the APVMA include hexazinone, MCPA and propiconazole – a fungicide for pineapple disease.

In addition, Australia is likely to ratify the Minamata Convention, a global initiative to phase out mercury-based products by 2020. Shirtan® is the only mercury-based fungicide registered in Australia and is registered for use only in sugarcane. Registrations for all other mercury-based products were cancelled in 1995. The existing Australian registration for Shirtan® will expire on 30 June 2015.

