QUESTION ON NOTICE
No. 1838
Asked on 24 November 2009

MR WENDT asked the Minister for Primary Industries, Fisheries and Rural and Regional Queensland (MR MULHERIN)–

QUESTION:

How does replicating urban stormwater management concepts assist Queensland cane farmers to minimise loss of nutrients and sediment from their farms?

ANSWER:

To manage run-off quality and quantity from urban development and rural properties (for example, cane farms), there are a number of stormwater Best Management Practices (BMPs) which can be utilised. These can include buffers, vegetated swales, sediment basins, stormwater harvesting systems and constructed wetlands, sometimes referred to as a 'treatment train' where individual devices are connected in series to improve overall treatment performance.

Results from urban situations indicate that stormwater wetlands alone can reduce sediments by up to 95 percent and nutrients by up to 80 percent (Fletcher *et al.,* 2004[1]). Although originally designed for the urban environment, these practices present treatment concepts that are equally applicable to rural catchments.

These stormwater management BMPs provide a toolkit from which individual BMPs can be selected to create a 'treatment train' to suit the characteristics of each property and to treat a range of likely pollutants generated within a particular area.

Previously there have been issues with validating the efficacy of sediment and nutrient management devices, for example 'what is best value for the producer and the community in terms of sediment and nutrient reduction'?

Needs analysis undertaken by the Department of Employment, Economic Development and Innovation (DEEDI) with the grower and extension community found that both producers and support staff were using 'gut feeling' and other qualitative methods when considering the effectiveness of sediment and nutrient mitigation devices. The needs analysis also clearly communicated that additional tools were required to assist in the validation process prior to construction.

The majority of stormwater management structures and associated research originate from the urban environment, with consultants, engineers and local government across Australia regularly using modelling tools such as the Model for Urban Stormwater Improvement Conceptualisation (MUSIC) to predict water quality outcomes from water quality mitigation devices. MUSIC represents an accumulation of the best available knowledge and research into urban stormwater management in Australia.

In order to customise and adapt urban stormwater management concepts for use by agricultural support staff, including CANEGROWERS and BSES, DEEDI undertook a thorough review and analysis of the applicability of urban stormwater management practices/tools to rural applications. National and International 'experts' were

engaged to assist with the customisation of modelling tools to reflect 'rural' landscapes. Material was developed and adapted from information prepared over many years from training courses developed for Monash University, the Coorperative Research Centres for Catchment Hydrology and Freshwater Ecology, Melbourne Water and eWater.

This work has been supported by CANEGROWERS who were enthusiastic to have tools that could be used by their field staff to assist producers develop site specific treatment options that use a known process and is also supported by quantitative data.

In July 2009, 26 extension staff representing 16 separate agricultural support organisations from across Queensland came together in Townsville to learn how to apply these concepts and tools to their industries. While it is recognised that further work is required to customise these tools, previously they were only being employed in urban situations but are now allowing a broad range of producers and investors to quantify the effect that a variety of stormwater BMPs will have on nutrient and sediment loads.

Recent feedback obtained from the Wet Tropics region indicates that through the use of these concepts/tools, producers now have better success of obtaining Reef Rescue funding for on-farm work as they are now able to quantify the level of sediment and nutrient treatment likely to be achieved.

[1] Fletcher, T.D., Poelsma, P., Li, Y. & Deletic, A. (2004) Wet and Dry Weather Performance of Constructed Stormwater Wetlands. Proceedings 2004 International Conference on Water Sensitive Urban Design, Adelaide Nov 2004 (WSUD2004).