Reef Water Quality Protection Plan

Reef Plan Paddock to Reef Sugarcane Water Quality Risk Framework

Priority	Management tactic	Weighting (Water quality assessment)	Indicative practice levels 2013			
			Lowest risk, commercial feasibility may be unproven	**Moderate-low risk**	**Moderate risk**	**High risk**
			Innovative	Best Practice	Minimum	Superseded
Soil management						
1	**Crop residue cover**	25%		Green cane trash blankets maintained in all blocks.	Often burn fallow blocks, maintain trash on ratoons.	No green cane trash blanket.
2	**Controlled traffic**	25%	Permanent wheel tracks. Row spacing matching wheel centres. ALL equipment including harvesters and haul-outs utilising same wheel spacing. DGPS guidance for all operations.	Permanent wheel tracks. Row spacing at 1.8m or more. **ALL equipment including harvesters and haul-outs utilising same wheel spacing.** DGPS guidance for bed forming/planting operations as a minimum.	**Matching wheel centres on equipment used for all land prep and pre-harvest operations.** Harvester and haul-out wheel spacing not matched to other farm equipment.	Old industry standard row spacing. Farm equipment not on matching wheel centres.

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3	**Land management during cane fallow**	20%	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.	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.	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.	Plough Out, Replant (PORP) OR No rotational crop. Bare or "weedy" fallow maintained with cultivation and/or herbicides.
4	**Tillage in plant cane**	20%	Zero tillage plant cane.	Bed renovation and/or zonal tillage, minimum required to be suitable for planting.	Reduced tillage (number and nature of cultivations region-specific).	Full cultivation (number and nature of cultivations region-specific).
5	**Tillage in ratoon cane**	10%		No tillage except as a component of Integrated Weed Mgt planning for avoiding herbicide resistance.	Minimum tillage (region-specific). Ripping of wheel tracks as necessary.	Full cultivation (number and nature of cultivations region-specific).
Nutrients						
1	**Matching N supply to crop N requirements**	60%	As for Best Practice, but with planning and application targeting **yield zones within blocks**.	Nitrogen budget (eg 6ES) developed with estimated N demand based on growers own yield expectations for **specific blocks** and **ratoon numbers** and considers seasonal climate predictions. Final application rates are as per calculated amount.	Nitrogen budget developed (eg 6ES) with estimated N demand based on a yield expectation of Estimated Highest Average Annual Yield + 20% (**district yield potential)** for plant or ratoon stage. Final application rates are as per calculated amount.	District rules of thumb determine applied N rate.

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2	**Timing of fertiliser application**	30%	As for Best Practice, plus utilising seasonal climate forecasts.	Application occurs prior to expected wet season commencement and with adequate risk assessment, inc weekly rainfall forecast.	Application occurs with consideration given to short term (<4 days) rainfall forecast.	Weather only impacts upon ability to complete application at that time.
3	**Application method**	10%		Subsurface (including surface applied and watered in).		Surface applied, not incorporated.
Herbicides						
1	**Timing application of residual herbicides**	40%	As for Best Practice plus use of SafeGauge for pesticides to further inform risk of off-site movement of herbicides.	As for Minimum plus plan to ensure residuals have been applied at least three weeks prior to anticipated wet season commencement.	Residual herbicides applied as soon as practical after harvest, with due consideration to current weather conditions and four day rainfall forecast.	Residual herbicides applied when it is most convenient and/or in salvage situations. Due consideration to current weather conditions including BoM radar and 48hr rainfall forecast.
2	**Targeting application to reduce the volume of herbicide applied**	40%	As for Best Practice, plus use of weed detecting equipment to further reduce total herbicide applied.	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.	100% coverage through conventional boomspray for most applications. Tank mix tailored to weed situation in each block, with residuals not used if not required.	100% coverage through conventional boomspray for all applications. Generally use a set residual+knockdown tank mix.
3	**Residual herbicide use in ratoons**	20%		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	Residual herbicides used once only on ratoon crops.	Residual herbicides used whenever likely to be effective, in both plant and ratoon cane.

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Water							
1	**Calculating the amount of water to apply**	Irrig 70	No Irrig 0		Amount of irrigation water applied to each block is less than or matches the soil water deficit.	Amount of water applied to each block exceeds the soil water deficit by **less than** 50%.	Amount of water applied to each block exceeds the soil water deficit by **more than** 50%.
2	**Managing surface runoff**	20	100	All drainage lines are designed to minimise erosion, are maintained with grass cover, and filter sediment before entering trap or pit. Farm layout directs all runoff safely to these structures. Runoff from the first 15 mm of rainfall is captured and retained on farm. All irrigation runoff is able to be captured and stored on-farm. Recycle pits have sufficient pumping capacity to re-use stored water.	Crop row orientation and surface topography ensures runoff is directed from all blocks without causing soil loss or waterlogging. All drainage lines are designed to minimise erosion, are maintained with grass cover, and filter sediment before entering trap or pit. Recycle pits have sufficient capacity to capture all irrigation-induced runoff. Recycle pits have sufficient pumping capacity to re-use stored water.	Crop row orientation and surface topography ensures runoff is directed from most blocks without causing soil loss or waterlogging. The majority of drainage lines are designed to minimise erosion and are maintained with grass cover. Recycle pits have insufficient capacity to capture all irrigation induced runoff.	Headlands and drains are not specifically designed to prevent erosion and are sprayed out and/or cultivated. No on-farm water capture.
3	**Optimising the irrigation system**	10	0		Irrigation system performance assessments occur on a regular basis.	Irrigation system performance assessments occur on an irregular basis.	Irrigation system performance assessments have not occurred.