A FRAMEWORK TO GUIDE IMPROVED OFF-FARM WATER QUALITY IN THE BURDEKIN

By

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THERE is much interest in management practices that have the potential to improve off-farm water quality in the sugarcane industry. The Burdekin region potentially stands out from other regions because crops are large, fully irrigated and have large quantities of inputs applied to them. Hence the risk of off-site impacts may be high.

Identifying specific practices to improve off-farm water quality is difficult because there is generally little empirical evidence of the impact of specific practices on water quality. In the absence of such evidence, it may be more profitable to link practices to specific water quality goals using the principles of water and chemical movement. We have developed a framework that provides these links.

The goals focus on minimising:

(1) the difference between water (irrigation and rainfall) applied and that used by the crop;

(2) the difference between nitrogen fertiliser applied and that used by the crop;

(3) the amount of pesticides applied; and

(4) erosion.

These *goals* are then matched to specific *strategies*, *tactics* and *actions* to describe management. For example, a strategy for the water management goal is to match irrigation (plus rainfall) to crop needs through irrigation scheduling.

The specific scheduling approach (e.g. minipans, WaterSense, etc) is the tactic employed, and the actions are the dates and amounts of irrigation applied. An alternative strategy may be to increase crop growth, through improved crop husbandry, variety selection, etc. to increase crop water use.

The goals help identify performance attributes that can be *monitored* to assess the effectiveness of particular actions. The framework can be used either to judge the benefits of specific practices, or to 'reason through' the types of practices that might need to be developed or adopted.

While developed in the context of the Burdekin region, it is applicable to other regions and other crops.